

THE IRON AGE

A Review of the Hardware and Machinery and Metal Trades.

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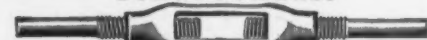
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THE IRON AGE

New York, Thursday, January 25, 1906.

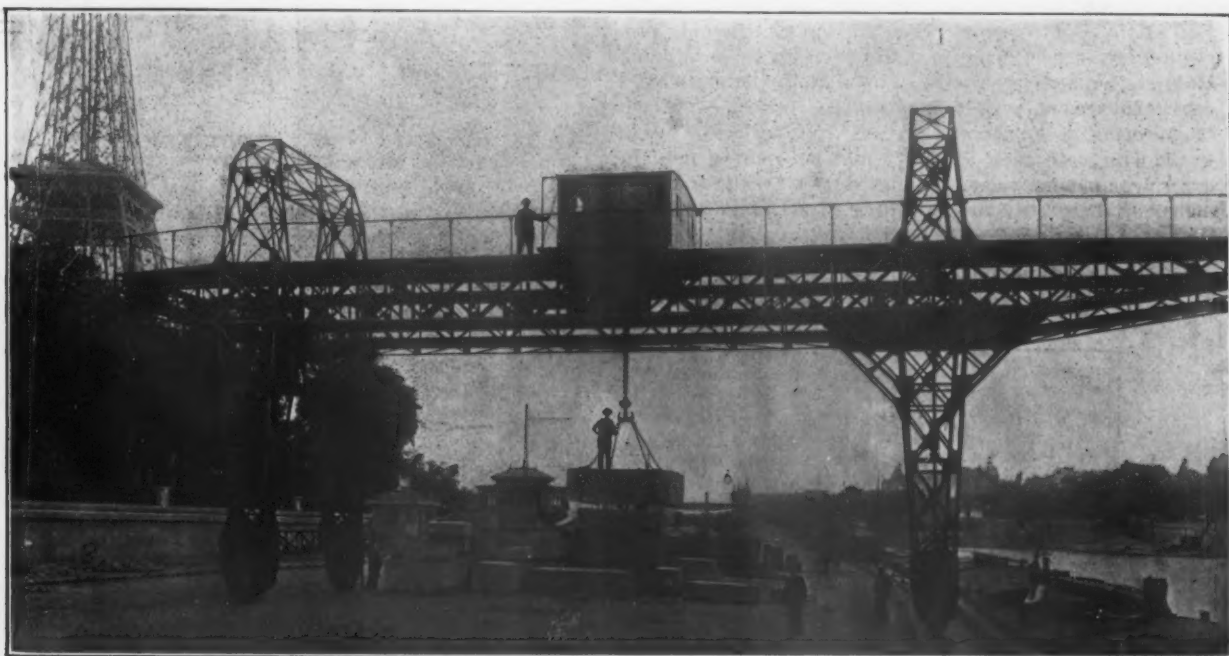
A French Electric Travelling Gantry Crane.

At the Quay d'Orsay, Paris, an electric fifteen-ton traveling gantry crane has been recently erected by the Etablissements Postel-Vinay which has some special features. The most interesting is the use, for the first time, of a new electric motor of high efficiency working with 110-volt single-phase current. Starting under load is effected with remarkable certainty and freedom from shock. The crane is used for unloading blocks of stone, and runs on curved rails conforming with the curve of the quay. Its movement, either loaded or empty, is effected without any slipping or binding by having the wheels on the outside of the curve slightly larger in diameter than the ones on the inside. The whole crane moves smoothly regardless of the position of the load upon the bridge.

The span from center to center of the uprights is 56½ feet; the effective range of the front cantilever is 23 feet,

nected through spur gears with the centre of a longitudinal shaft that extends to the supporting uprights. At these ends bevel gears transmit power to vertical shafts which, through more gears, drive two of the four crane wheels.

Upon the trolley which runs along the girders forming the bridge are located the three motors driving all but the transporting mechanism. The trolley also carries the controllers and resistances necessary for the motors. The hoisting drum has two helical grooves symmetrically formed, with reverse threads for simultaneously winding the two strands of chains to which the hook is attached. This decreases the tendency for the load to oscillate during ascent or descent. The hoist controlling mechanism is similar to that for controlling the trolley and for moving the crane, and includes an ingenious high-power electric brake of reversible type, which acts perfectly with single-phase current. The winch is also fitted with



A 15-Ton Electric Traveling Gantry Crane, Erected at the Quay d'Orsay, Paris, by the Etablissements Postel-Vinay.

and that of the rear cantilever, 8 feet, making the total range or run of the trolley 87½ feet. The height beneath the rear girders is 23 feet. The inclination of the quay is 4 to 100. The load is raised at the rate of 11½ feet per minute; the trolley runs at a speed of 98½ feet, and the whole plant can be traveled at 148 feet per minute.

The framework of the crane is of lattice or open-work type to decrease the wind resistance. It comprises two longitudinal girders supported by uprights that are held together at the top by arches sufficiently high to permit the trolley to pass beneath. Each of the two girders is of box section, three sides of which are latticed, while the top is a solid iron plate forming a footway along the bridge. The uprights of the hand-rail contribute to the rigidity of the girders, being vertical prolongations, to a height of about three feet, of parts of the girder itself, and connected together the length of the crane by a horizontal member constituting the hand-rail. At their lower ends the legs of each upright are connected by a beam, and beneath these legs are placed the wheels upon which the crane travels along the quay.

A separate motor is used for each movement of the crane. The one which travels the crane entire is located in the symmetrical axis of the bridge and under one of the running boards formed by the tops of the main girders. The motor is inclosed in a sheet-iron casing and is con-

an automatic mechanical brake, enabling the load to be lowered and stopped, and all the movements may be accomplished by the manipulation alone of the devices controlling each mechanism.

The current is supplied to the crane by an overhead wire, and is collected by two shoes, the runners of which are fixed upon a suitable device to enable them to pass over inequalities and slight gaps in the line, which runs in straight stretches or chords that are not continuously parallel to the quay.

The Pennsylvania Railroad has completed plans for the further improvement of its new lake terminals at Buffalo, which will make it among the best in the country for handling ore and coal. The terminal yards and ship canal adjoin the plant of the Buffalo & Susquehanna Iron Company. The ship canal was built jointly by the two companies. The complete plans contemplate the expenditure of upward of \$2,000,000. Two Brown fast unloading hoists have already been installed and further facilities for the transference of ore and coal are to be added, including large additional trackage during the winter so that by the opening of navigation everything will be in readiness to receive ore cargoes and to transfer coal from cars to boats.

Government Tests of Lubricating Oils.

BY A. B. WILLITS, U. S. N.

The selecting of the best lubricating oils for the machinery on our naval vessels has become a momentous question during the past year, owing to the decision of the Department to disapprove requisitions for special brands and in lieu thereof to purchase in open market entirely on specifications. For many years lard oil was the recognized standard, but with the advent of engines of greater power coincident with the development of a cheaper and better lubricant in the petroleum oils, lard oil with its unsavory odor and high cost became a back number, and a few particular brands of mineral oils were adopted with satisfactory results. The actual tests made by contractors during their official trials of the big vessels, where so much depended upon efficient lubrication, brought the excellence of these brands, which were carefully compounded for the particularly trying service, into such prominence as to practically give them the monopoly in the navy.

It was quickly discovered that there was a chance for competition in this field, offering a good return, and there soon came a demand for the privilege of bidding from every oil compounder, many of whom had little appreciation of the requirements. In admitting all, the only protection lay in specifying in detail such qualities as must characterize acceptable oils. Fortunately the experience with the special brands enabled the Bureau of Steam Engineering to formulate precise specifications, which would eliminate such oils as would have to be used in excessive amounts to keep the bearings efficient, or would endanger these bearings by failing to maintain an effec-

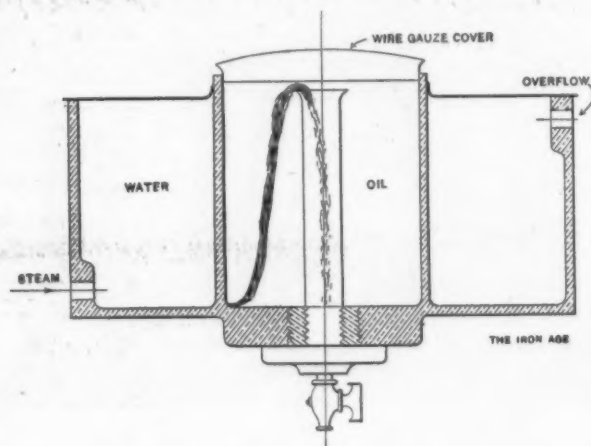


Fig. 1.—Device for Testing the Gumming Tendency of Oil.

tive film under high speeds, pressures and temperatures.

To appreciate how important this is, take for instance an armored cruiser like the West Virginia or Pennsylvania, ships developing 23,000 indicated horsepower, which at, say, 18 knots per hour, require about 200 gallons of best mineral oil per day for proper lubrication. With a poorer grade the quantity must be increased, and the danger of hot bearings arises. The brasses for one main engine crank pin weigh 450 pounds and require about 100 pounds of Babbitt metal, and when this is overheated and burnt out by bad lubrication, it is no trifling job to disconnect and reline the boxes, while the time at which such crippling occurs might cause the defeat of a maneuver or the loss of a battle. It is natural and proper, therefore, that Naval engineers should resent all movements toward loading up with any but excellent oils.

In March, 1905, specifications for lubricating oil for marine machinery were issued, embracing a frictional test on an oil testing machine, using a standard brass bearing of about nine square inches projected area on a polished steel mandrel making about 160 revolutions per minute, in which test the limit of temperature was designated to be 130 degrees F. The average load on the

bearing during two hours' test must be at least 300 pounds per square inch of projected area, the quantity of oil necessary to prevent undue friction and higher rise of temperature being taken into account in the results, and the quotient, found by dividing the product of the average total pressure on the journal and surface speed of journal in feet per minute by the weight of oil in grains for lubrication during the two hours, not to fall below 325,000. The flashing point must not be below 400 degrees F. Sufficient oil to cover the bottom of a shallow dish when heated to 250 degrees F. and cooled slowly must exhibit no gummy residue. The oil must flow at a temperature of 32 degrees F. A small quantity when applied to a polished copper plate must not turn

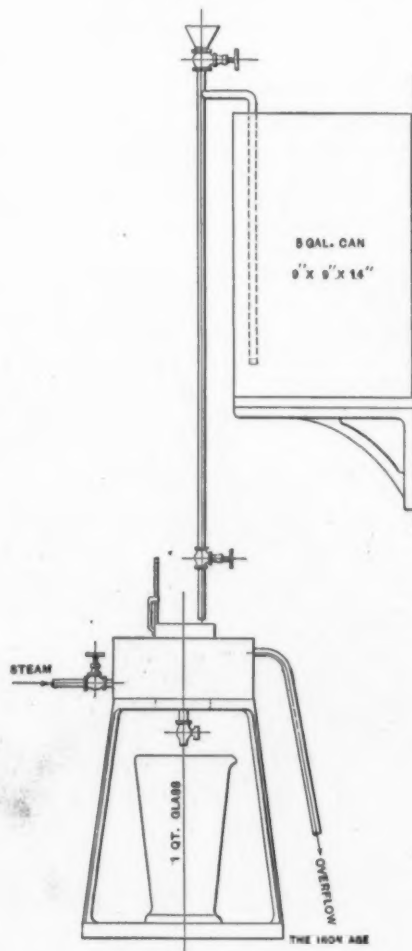


Fig. 2.—The Complete Apparatus for Making Gumming Tests.

the surface of the metal green if allowed to stand exposed to the air for twenty-four hours. The viscosity of the oil at 90 degrees must be between 685 and 710 compared with distilled water (49) at 90 degrees F. When tested in an Engler viscosimeter. Using the same standard the viscosity of the oil at 150 degrees F. must be between 155 and 165 and at 225 degrees F. between 75 and 85.

It was found that the greater number of failures consisted in unsatisfactory viscosity at the different temperatures, and this point alone is a most important guide in selecting good oil. Later experiments, however, proved that an additional gumming test was necessary to prevent the acceptance of unsatisfactory grades, and a special test has now been added, as follows: Using a single wick, one-half pint brass oil cup, and maintaining the oil at about 140 degrees F. practically equal quantities of oil must feed through the wick in equal intervals of time, for three intervals of eight hours each. At the end of the test the wick must be clean and the sides of the oil cup bright and clean.

The accompanying sketch, Fig. 1, shows the oil cup device arranged for carrying out this gumming test. It is a single double cup casting, the outer part of which

is kept filled with hot water, maintaining readily the temperature of the oil at about the required limit by adjusting the steam admission valve. Fig. 2 shows the arrangement complete for the test. The siphon pipe may be readily applied to one of the ordinary five gallon cans in which oil is now delivered for Government use. This enables the haphazard selection of any can on a lot, and as it draws the oil from the bottom of the can its worst features are exposed if it contains a gummy sediment.

Where the continuous three periods of eight hours each are not practicable, the test is stopped by closing the lower pet cock on the oil cup, the steam blow off valve, and the oil admission valve in the siphon pipe, and continued on the following day without having disturbed the wick by first heating the oil by the water bath to the required temperature before opening the bottom drip cock. The height of oil in the oil cup is maintained between two marks on the inside of the cup to a fair height. The thermometer is kept in the oil, and the drip from the cup is caught in a one quart graduated glass, which, when filled to the quart mark, is replaced by an empty glass and record made, together with the fractional parts at the end of each eight-hour period.

Some manufacturers consider this test severe, but the best oils in use have successfully passed and practically filled the conditions required.

Bill to Punish Trademark Infringement.

WASHINGTON, D. C., January 20, 1906.—The movement on the part of numerous patent law experts and trademark owners to induce Congress to provide a criminal remedy within the jurisdiction of the United States courts for the willful infringement of marks registered in the United States Patent Office has resulted in the introduction by Representative Wiley of New Jersey of a bill providing a series of important amendments to the existing trademark law, which was passed by the last Congress and went into force April 1, 1905. This movement has been supported by the American Bar Association and by various patent law organizations, and an effort was made last winter to secure the necessary legislation in connection with the enactment of the Bonyng Trademark law. It was found, however, that a considerable number of Senators and Representatives were averse to creating new offenses by Federal statute, and it was therefore feared that the insertion of a criminal provision in the Bonyng bill might imperil its passage. Experience during the past year, however, has greatly emphasized the necessity for a criminal statute to prevent and punish infringement of trademarks and very strong pressure will be brought to bear on the Patent committees of the two houses to give early consideration to the Wiley bill.

Provisions of Wiley Bill.

This measure embraces five sections. By the terms of the first section the following provision defining criminal infringement and providing penalties therefor is to be added to Section 16 of the existing trademark law:

Sec. 16a. Any person who shall willfully and with intent to defraud transport or cause or procure to be transported between the States, or to any foreign nation or Indian tribe, or shall deliver to any carrier to be so transported, any goods not those of the owner of the trademark, but of the same or substantially the same descriptive properties as the goods for which the said trademark is registered and upon which the same is used by the owner thereof, to which or to the packages or receptacles containing which is affixed any trademark registered pursuant to the provisions of this act, or any false representation, likeness, copy or colorable imitation thereof, shall on conviction thereof be punished by a fine not exceeding \$1000 or by imprisonment for not more than two years, or by both such fine and imprisonment.

By Section 2 of the bill Section 20 of the present law is amended so as to prescribe the procedure in criminal as well as civil prosecutions. As thus amended the section will read as follows:

Sec. 20. That in any case involving the right to a trademark registered in accordance with the provisions of this act in which the verdict has been found for the plaintiff, or an injunction issued, and in any criminal prosecution arising under this act to which the verdict has been found against the defendant, the court may order that all labels, signs, prints, packages, wrappers or receptacles in the possession of the defendant bearing the trademark of the plaintiff or complainant, or any reproduction, counterfeit, copy or colorable imitation thereof, shall be

delivered up and destroyed. Any injunction that may be granted upon hearing, after notice to the defendant, to prevent the violation of any right of the owner of a trademark registered in accordance with the provisions of this act by any Circuit Court of the United States, or by a judge thereof, may be served on the parties against whom such injunction may be granted anywhere in the United States where they may be found, and shall be operative, and may be enforced in proceedings to punish for contempt, or otherwise, by the court by which such injunction was granted, or by any other Circuit Court, or judge thereof, in the United States, or by the Supreme Court of the District of Columbia or a judge thereof. The said courts, or judges thereof, shall have jurisdiction to enforce said injunction, as herein provided, as fully as if the injunction had been granted by the Circuit Court in which it is sought to be enforced. The clerk of the court, or judge granting the injunction, shall, when required to do so by the court before which application to enforce said injunction is made, transfer without delay to said court a certified copy of all the papers on which the said injunction was granted that are on file in his office.

By the next section of the bill it is provided that "no criminal prosecution shall be maintained in any case where the trademark is used in unlawful business or upon any article injurious in itself, or which mark has been used with the design of deceiving the public in the purchase of merchandise or has been abandoned, or upon any certificate of registration fraudulently obtained."

Trademark Owners Must Give Notice.

Mr. Wiley proposes by Section 4 of this bill to protect alleged infringers from criminal prosecution in cases where the party claiming the trademark in question has not properly protected it by giving notice of its registration or duly notifying the infringer. To effect this purpose it is proposed to amend Section 28 of the existing law to read as follows:

Sec. 28. That it shall be the duty of the registrant to give notice to the public that the trademark is registered, either by affixing thereon the words "Registered in U. S. Patent Office," or abbreviated thus: "Reg. U. S. Pat. Off.," or, when from the character or size of the trademark, or from its manner of attachment to the article to which it is appropriated, this cannot be done, then by affixing a label containing a like notice to the package or receptacle wherein the article or articles are inclosed; and in any suit for infringement by a party failing so to give notice of registration no damages shall be recovered, except on proof that the defendant was duly notified of infringement, and continued the same after such notice, nor shall any criminal prosecution be maintained in the absence of such notice except upon the like proof.

The final section of the bill provides that it shall take effect upon its passage.

This important measure has been referred to the House Committee on Patents, of which Representative Currier of New Hampshire is chairman. The advocates of the bill will seek to have it made the subject of a series of hearings at an early date. It is anticipated that there will be some opposition to the measure on the part of those who oppose the creation of additional criminal offenses, but it is believed that the hearings will develop practical unanimity of sentiment favorable to the measure of all who may be properly regarded as experts in patent law.

W. L. C.

In the January number of *Moody's Magazine* Charles E. Keator, vice-president of Dunlap & Co., has an article on "Why Industrial Alcohol Should Be Untaxed." The writer argues that instead of being less than 5,000,000 gallons, as at present, the consumption of alcohol for industrial purposes in the United States should now be about 80,000,000 a year, considering that previous to 1861, when the internal revenue tax was imposed, more than 30,000,000 gallons of alcohol a year were thus used in the United States. Germany is now using annually more than 70,000,000 proof gallons of alcohol in industrial lines. Denaturized alcohol, the writer says, would be used in large quantities in the United States if the tax of \$2.07 were removed. Through two comparatively recent discoveries the invention of a method of using alcohol with the incandescent mantle for lighting purposes and the perfection of the internal combustion engine for motor vehicles, power boats and farm and other engines, there has been opened up a possible future consumption of hundreds of millions of gallons.

The Pennsylvania Coal & Coke Company, Johnstown, Pa., will build 300 more coke ovens at Moss Creek, Cambria County, Pa.

The Franklin Bicentennial.

The two hundredth anniversary of the birth of Benjamin Franklin was celebrated January 17 by organizations in many parts of the country. Philadelphia, however, took the lead in this respect in acknowledgment of the fact that while Franklin was a native of Boston he removed to Philadelphia while a youth and was actively identified with that city in his long and brilliant career. The Franklin Institute, Philadelphia, held its annual meeting on that day. At this meeting President John Birkinbine, who had just been re-elected for the tenth time, submitted the annual report of the Board of Managers, from which the following extracts are taken:

"In presenting this report your Board of Managers expresses the hope that the two hundredth anniversary of the birth of Benjamin Franklin may be recognized in such manner as to materially advance the Institute which bears the name of this illustrious American. Eighty years of sustained effort in advancing the mechanic arts have honored the name of Franklin and won for the Franklin Institute world-wide fame, to which it is justly entitled. But this effort has failed to enlist the financial support necessary to permit the self-imposed work being so prosecuted as to keep the institute as well in advance as it should be. Our unequaled technical library demands each year large expenditures to maintain it as a complete reference library, and the opportunities for scientific investigation need liberal expenditures.

"The Committee on Exhibitions is seriously considering a celebration of the bi-centennial of Franklin's birth by an exhibition in Philadelphia, believing that the time is opportune. What more fitting recognition than an exhibition of the graphic arts and a display which would demonstrate the marvelous advance since close to our institute home Franklin drew electricity from the clouds?

"The reports of the various committees of the board and of the institute, and records of the schools, which are important features of the institute's work, give details of what has been accomplished during the year, but the results may be summarized as follows:

"For eight decades the night schools of the Franklin Institute have attracted men who, in the endeavor to help themselves, received in these practical aid, and many who later achieved prominence, made their initial start in these schools. During the past year 601 students were in attendance in the night schools; 447 studied drawing; 96 machine design, and 28 naval architecture. It would be interesting, were it possible, to trace the advance in education, and in science, due directly to the conscientious work of preceptors and scholars in the Franklin Institute schools. The gratuitous assistance given students by the institute's professors and lecturers deserves cordial recognition.

"The Committee on Science and Arts reports the recommendation of the award of 21 medals, two certificates of merit, and making five advisory reports, with 41 cases pending at the close of the year. The work of this committee has, as in the past, honored the institute, and through it given public recognition to meritorious discoveries and inventions.

"The roll of members, now 1554, is far below what it should be to properly sustain the work above outlined, for much of the expense of this, as the financial statement indicates, is met by membership dues. The board has accepted grateful contributions of books and other documents, which have been added to the library. It also acknowledges donations which have somewhat augmented the available funds of the institute. But the limited endowment and the decreased interest obtainable demand that every expenditure be reduced and seriously limit the good which the institute could accomplish. The total invested funds of the Institute, including all special funds, amount to \$141,325.10, and the value of building site and contents will fully double this."

In the evening of the same day addresses were made before the institute by President Birkinbine and by Professor Albert H. Smyth of the Philadelphia Central High School. Mr. Birkinbine said:

"Two hundred years ago Benjamin Franklin was born in Boston, but as so much of his life was spent in Philadelphia, where he developed most of his admirable qualities, and where he obtained prominence as a printer, philosopher, author and statesman, it is appropriate that the anniversary of his birth be celebrated here, and that this celebration should begin at the Franklin Institute.

"The Board of Managers has decided to recognize this anniversary by a series of commemorative addresses and papers, the first of which you will hear to-night. The board has also taken the initiative steps for an industrial exposition in the coming fall. The only drawback to assuring success to this enterprise is the uncertainty of obtaining accommodations for the exhibit. Tentative arrangements had been made for the use of the main exhibition hall, one of the permanent pavilions and also the outside ground connected with the Commercial Museum, in West Philadelphia. These plans may be interfered with by the avowed intention of the city authorities to use the pavilion as a temporary addition to the Almshouse. Hence definite announcement of the exhibition cannot be made at the present time."

After touching upon his arrival in Philadelphia as a runaway apprentice and his well-rounded career, Mr. Birkinbine continued:

"The neighborhood of the institute is replete with reminiscences of Franklin. Dying at the age of 84 years, his body is interred within four blocks of this hall, and somewhere in the open fields, between the place where you sit and the present Post Office site, it is said that he made his famous experiment of conducting lightning from the clouds in 1752. Most of his work was done within half a mile of this locality, for Philadelphia was then a moderate-sized town and its navigation was confined entirely to sailing craft and rowboats.

"With wood for fuel, there was no demand for ordinances abating smoke nuisances, nor fear of coal strikes. There were no department stores, unless we credit Franklin with imitating them by his modest enterprise in which it is reported he disposed of a variety of goods from books to human chattels. The absence of skyscrapers eliminated the danger of elevator accidents, and Franklin could pursue his studies free from interruption from a telephone call, or from insurance or book agents.

"To-night we see our City Hall outlined with thousands of lights to honor the memory of the man who first controlled electricity. Hundreds of thousands of our townspeople have to-day ridden in cars propelled by electricity or steam. Tens of thousands of horse-power are hourly developed by coal mined far below the earth's surface. More than 1500 miles of streets cover water and gas pipe, sewers, light and telephone conduits, etc., probably sufficient to span one-half the earth's circumference, and messages flash or power is transmitted by overhead wires aggregating a far greater distance."

Professor Smyth's address was on "Franklin as a Man of Letters," after the delivery of which a series of lantern pictures, representing interesting objects in connection with Franklin's life, was thrown on a screen. It was announced that owing to the fear that it might fall to pieces the electric machine in the possession of the institute, by which Franklin generated electricity 150 years ago, would not be exhibited in operation as had been intended.

Max M. Suppes, general manager of the Lorain Works of the National Tube Company, has been granted a patent on a method of skimming slag from molten metal. It consists in displacing the slag by the immersion or partial immersion therein of a body of refractory material having a specific gravity higher than that of the slag but lower than that of the underlying metal.

Between January 1 and January 20, 1906, plans were filed in the Borough of Manhattan for 124 buildings, to cost \$7,051,350. In the corresponding period in 1905 plans were filed for 100 buildings, with an estimated cost of \$5,358,600.

A Pratt & Whitney Special Turret Lathe.

A machine that has been found very efficient and satisfactory for finishing the interior and ends of small gasoline engine cylinders is the 3 x 36-inch turret lathe made by the Pratt & Whitney Company, Hartford, Conn., and equipped, as illustrated in Fig. 1. The machine has in place of the usual rod feeding or holding device, a special chuck for rigidly holding the cylinder. The turret and cross slide tools are used for boring the inside of the cylinder and turning and facing a collar at one end.

The chuck, which is best shown in Fig. 2, grips the work by means of two swinging clamps, each operating against two fixed points. Both clamps also have two bearing pins in a swinging member, consequently the

by this particular machine. Where manufacturers have insufficient work to keep the machine constantly employed on castings it is advisable to have it equipped with the rod feed and collet mechanism so that it may also be used for rod work.

The Carnegie Relief Fund.

At all the blast furnaces, mills and other plants operated by the Carnegie Steel Company notices were posted last week showing operations of the Carnegie Relief Fund in 1905. During the year just closed a grand total of \$266,290.15 was distributed from the fund, of which \$96,187.80 was paid in accident benefits, \$123,-

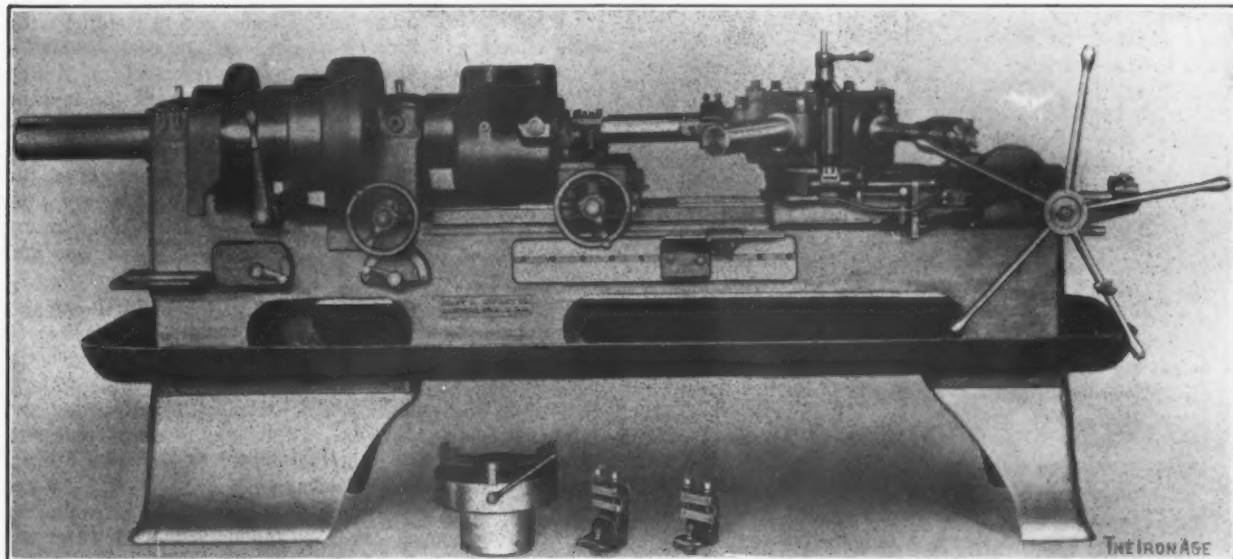


Fig. 1.—A 3 x 36 Inch Pratt & Whitney Lathe, Specially Equipped for Boring and Facing Gas Engine Cylinders.

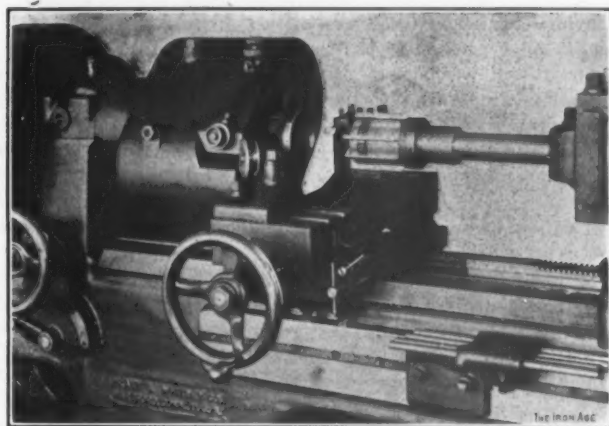


Fig. 2.—Another View of the Chuck.

work is perfectly supported on eight separate points while being machined. This avoids the necessity of clamping so tight as to distort the casting and insures the bore of the cylinder being true when the work is removed from the chuck.

The turret tools are for boring the cylinder and consist of rigid boring bars with high speed cutting tools. On the shank of one of the bars, as may be seen in Fig. 1, there is a turning arm holding a cutter for turning the collar or flange of the cylinder. The reamer for finishing the hole is allowed to float on its shank and is of the expansion type. As both the turret slide and cross slide have independent power feeds, both turret and cross slide tools are in action simultaneously, and economize time.

The work on which the machine illustrated is engaged, is a cylinder having a bore 4 inches in diameter by 7 inches deep. There are numerous other parts in automobile manufacture which may be profitably handled

249 in death benefits and \$46,853.35 in pension allowances.

Each year since the founding of the fund by Andrew Carnegie the disbursements have increased, and no case that comes under the regulations governing the distribution of the funds has been passed by. In 1902, the first year after the founding of the fund, \$48,213.85 was distributed. The following year the benefits amounted to \$180,652.17, and in 1904 the total was \$241,988.32. This makes a grand total for the four years of \$737,144.49, divided as follows: Accident, \$351,015.64; death benefits, \$263,332; pensions, \$122,796.85. The total number of cases cared for since the beginning of the distribution is as follows: Accident, 7458; death, 523; pension, 399, or altogether 8380.

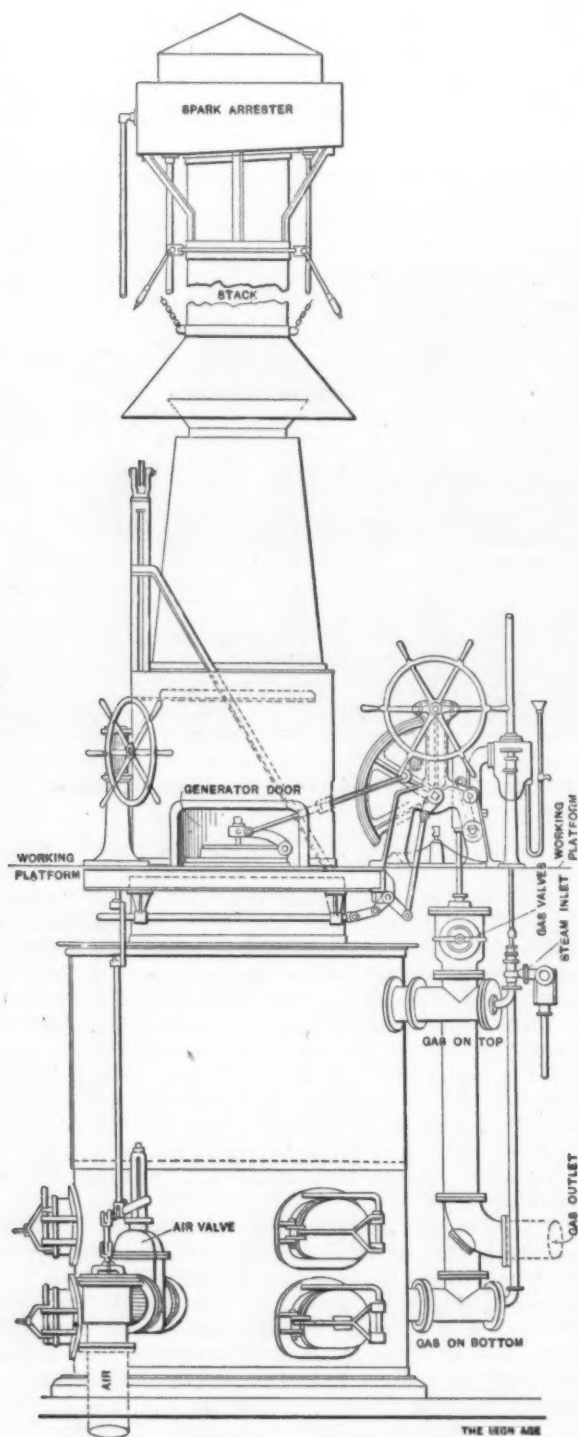
The fund was established by Mr. Carnegie in January, 1902, when he set aside \$4,000,000, the interest from which was to be devoted to the relief of injured employees, to pay death benefits and to provide annuities for those who, after 15 years of employment with the Carnegie Steel Company or constituent companies, reach the age of 60 and are judged physically disqualified for longer continuing at work. While the affairs of the Relief Association are conducted separately from the Carnegie Hero Fund, they are under the same management. F. M. Wilmot being at the head, with J. B. Erskine as his assistant. The association has offices in Room 327 of the Carnegie Building, Pittsburgh.

At the annual election of the Buffalo Foundrymen's Association, held last week, the following officers were chosen: President, Lyman P. Hubbell; vice-president, William H. Barr; secretary, John E. Gorss; treasurer, George M. Treffs.

The Pittsburgh Steel Company, Pittsburgh, Pa., has closed a contract with the Pittsburgh Coal Company for 1000 tons of coal a day for a period of five years.

The Use of Water Gas in the Arts.

Water gas is used in this country only to a very small extent as the processes now employed for its production are uneconomical and expensive to install. In these plants water gas is made by blowing steam through glowing fuel and heating the latter up at certain intervals by blowing air through. Generally gas is made for about four to five minutes, and air blown for the four to



A Form of Water Gas Generator Built by Oskar Nagel, New York.

five minutes following, &c. During the hot blowing period a poor producer gas is formed, which can be utilized only under favorable local conditions. The long intervals between the gas making periods necessitates the use of a very large holder, and in places where the producer gas has to be used, a second holder has to be installed, which means a large increase in the first cost.

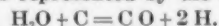
In Europe great strides have been made in this art; the first cost of apparatus has been considerably reduced, and the yield in water gas doubled. European engineers

have entirely done away with the production of producer gas in this process. By using a lower layer of fuel, and an air blast of certain pressure, the making of water gas is carried on now continuously for eight to nine minutes, and then hot blowing is done for three-quarters to one minute. The handling of the apparatus is simplified and made absolutely safe by an interlocking valve device. The size of the holder is decreased, the first cost reduced, and the introduction of this valuable gas greatly facilitated. There are now over 200 of such water gas plants in operation on the Continent and in England. They are used for open hearth and crucible steel melting; melting of every kind; annealing, brazing, tempering, soldering and forging, and chain, spring and needle manufacture. The purity of the flame and the ability to regulate the temperature from low to the highest values, make water gas especially adapted for the above named uses.

Welding with water gas as compared to welding with coke effects a saving of 50 per cent. in fuel, besides a saving in labor. Fourteen to eighteen feet of $\frac{3}{8}$ -inch boiler iron can be welded in one hour, with the help of three men. Boiler iron from $\frac{1}{8}$ -inch up to 3 inches can be welded successfully into the most complicated shape at a lower cost than ordinary riveting. Some of the most prominent European welding concerns are now using water gas exclusively for welding large tubes in any length, flues, masts, buoys, annealing pots, flanges and car wheels.

Water gas plants are also used with great economy and convenience in chain making. The saving in fuel is 40 to 60 per cent. In the manufacture of rivets and bolts, nails, horseshoes, smiths' forges, hardware and cutlery, it is used with equal success, and also for annealing and tempering tools, saws, &c. Thirty-five to forty cubic feet of gas of 285 British thermal unit heating value are obtained from one pound of coke. With coke at \$4.00 per ton 1000 cubic feet of gas will cost six cents, excluding depreciation, wages, &c. One thousand feet of water gas are equivalent to 500 feet of illuminating gas.

The illustration shows a water gas generator built in this country by Dr. Oskar Nagel, 90 Wall street, New York, which follows European practice. The generator, which is a cylindrical shell, lined with firebrick, and provided with the necessary valves for entrance of air, &c., is filled with coke to a certain height, and blown hot by means of a positive blower. During this period the air inlet valve and the charging door leading to the flue are open and the gas valves closed. The air enters under the grate and goes through the fuel to the stack. When the generator is sufficiently hot, the air inlet and charging door are closed and at the same time the upper and lower gas valves are opened, depending upon where the gas is to leave the generator. Then steam is blown into the fuel until the gas becomes poor in quality, which can be seen from a test flame. Chemically the process consists of the combination of the oxygen of the steam with the carbon of the coal to form carbon monoxide, and hydrogen is liberated as represented by the formula



The average composition of the water gas is: H, 50 per cent.; CO, 40 per cent.; CO₂, 3.5 per cent.; N, 4.3 per cent.; CH₄, 0.7 per cent.; O, 0.5 per cent.

When the quality of the gas deteriorates the steam valve is closed, the air valve and charging door opened, the gas outlet closed, and the blower started. In this way air and steam are blown alternately through the generator. The steam is blown in from the top and from the bottom alternately to make the distribution of the heat in the generator more uniform. Fuel is charged through the charging door after three periods of gas making. The generator is provided with tight doors through which clinkers and ashes are removed.

The air and gas valve are interlocked, so that they cannot be opened at the same time; when the air valve is opened the generator is locked and vice versa. This insures absolute safety. The generator and all the valves are worked from the platform. The water gas after leaving the generator goes to the scrubber which is filled with coke and sprinkled with water; from here the gas goes to a small holder, which serves as an equalizer.

Prospects for Free Industrial Alcohol.

WASHINGTON, D. C., January 23, 1906.—Notable progress has recently been made in the campaign to secure the enactment of legislation providing free grain alcohol for industrial use. Since the beginning of the present session no less than eight bills have been presented in the House providing for free denaturalized spirits for use in the arts, and such strong pressure has been brought to bear upon the Ways and Means Committee, to which these bills have been referred, that a resolution has been adopted to give hearings to all interested parties, the first session to be held on February 7.

Interests Urging Legislation.

The advocates of this legislation now include all the leading manufacturers of gasoline engines, automobiles, motor boats, many producers of iron and steel articles finished with lacquers, bronzes and enamels, manufacturers of smokeless powder and fixed ammunition, in addition to a host of farmers represented by the National Grange, an organization that is pushing the alcohol bills in the hope of providing a method of utilizing surplus crops of grain, fruit and potatoes, to the great advantage of the agricultural classes. The bill on which the majority of those interested in this campaign appear to have united has been introduced in the House by Representative Calderhead of Kansas, and provides as follows:

On and after the passage of this act no internal revenue tax shall be levied or collected on ethyl alcohol of domestic production which has been rendered undrinkable or unfit for use as a beverage prior to withdrawal from distillery bonded warehouse.

Sec. 2. The Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall prescribe the necessary regulations to carry this act into effect.

Sec. 3. Any person or persons who rectify or purify ethyl alcohol which has been removed from distillery warehouse free of tax under the provisions of this act, so to remove or separate therefrom by any process whatever the substance or substances which have been added thereto for the purpose of rendering such ethyl alcohol undrinkable or unfit for use as a beverage, shall, on conviction, be subjected to a fine of not less than \$500 nor more than \$5000, and be imprisoned not less than six months nor more than three years.

Similar bills have been presented by Representatives Roberts of Massachusetts, Hill of Connecticut and Marshall of North Dakota. Representative Jones of Washington has introduced a bill reviving the free alcohol provisions of the Wilson tariff act, which was appealed after being nullified by the Treasury Department on the ground that they were impracticable. Representative Lovering of Massachusetts has presented a bill permitting domestic alcohol to be withdrawn from bonded warehouse for use in the manufacture of goods for export with benefit of rebate of the internal revenue tax on the same terms upon which drawback of duty is now allowed on imported alcohol used for the same purpose. The passage of so comprehensive a bill as that introduced by Representative Calderhead was strongly advocated by the National Board of Trade at its annual convention held in this city last week, and many other commercial organizations throughout the country are becoming interested in this campaign.

Alcohol for Power Purposes.

Owing to the increased use of small motors the manufacturers of automobiles, power launches and internal combustion engines are taking an important part in this movement. They declare that alcohol is not only a decidedly satisfactory substitute for gasoline as a motor fuel, but it is superior in many important particulars. It is clean, odorless and free from danger of accidental explosion. The vapor given off is not inflammable unless closely confined and naked lights can be used around the machine with impunity. The worst danger to be apprehended from a leak in the pipe or storage tank would be the loss of the fuel, or a slow fire, if a flame came into actual contact with the alcohol. The supply is absolutely unlimited. Alcohol can be obtained from all substances containing sugar or starch, or compounds which can be transformed into sugar, such as corn, grains of all kinds, potatoes, cane and beet sugar refuse, grape skins and refuse of wine making, &c. Increased demand can only have the effect of increasing production and stimulating

efforts to perfect and cheapen processes of distillation and distribution.

In countries where it is not made artificially dear by taxation alcohol is rapidly taking the place of gasoline and other petroleum distillates as a fuel for explosive motors of all kinds. In all the leading European countries alcohol made undrinkable by officially prescribed processes of denaturalization is tax free. The use of alcohol as a fuel is prevented in this country by an internal revenue tax equal to more than 1,000 per cent. of its cost. Under the present tax alcohol is fifteen times as costly as gasoline at its present price. If the tax on alcohol were removed it would be as cheap as gasoline, if not cheaper, and would be the best fuel for explosive engines.

Smokeless Powder and Fulminates.

Manufacturers of smokeless powder are also taking part in this campaign. The weight of alcohol required in making the best smokeless powder is 1.4 times the weight of the finished powder. The internal revenue tax on this alcohol is \$2.08 per gallon, making the tax on the quantity necessary to use in making a pound of the best smokeless powder 37 cents. The result is that the American sportsman must either be satisfied to use an inferior powder, with the danger of fouling and corroding, or pay an excessive price for the best. With the tax removed the best powder would also be much the cheapest.

The failure of our revenue laws to provide for the use, free of tax, of alcohol for industrial purposes has totally destroyed the manufacture in this country of fulminating powder or fulminate of mercury, the explosive agent used in percussion caps and cartridges of all kinds. Practically all the fulminate of mercury used in the United States is now made in Canada, the alcohol being shipped from this country in bond, without payment of tax, and used in bonded manufacturing warehouses in the production of the fulminate. This is exported to the United States, paying a customs duty of 30 per cent., which is considerably less than our internal revenue tax on the alcohol necessary to manufacture it. The result of the present policy of taxing alcohol used for industrial purposes is, therefore, to give employment to Canadian workmen, instead of American workers, and to prevent the development of an important industry in this country. With untaxed alcohol not only would every pound of fulminate used in this country be made here, but our manufacturers would be enabled to compete successfully in the world's markets.

No Revenue Question Involved.

The necessity for placing our industries on an equal footing, in so far as this necessary material is concerned, with those of foreign countries has long been recognized, but so far the influence of the manufacturers has not been sufficient to secure the enactment of the desired legislation. One reason for the failure of Congress to act has been the unfounded belief on the part of some of its members that the proposed legislation would cause a serious loss in revenue through the substitution of untaxed denaturalized alcohol for taxed alcohol. This, however, is a mistake, since the enactment of this legislation would have no appreciable effect on the revenues. Owing to the present tax of \$2.07 per gallon on commercial alcohol, the use of that material for industrial purposes has been practically prohibited, wood alcohol and other untaxed substitutes being used almost entirely, except in the production of such articles as flavoring extracts, perfumery, drugs, pharmaceuticals and other articles requiring pure ethyl alcohol. The manufacturers of this latter class of goods could not use denaturalized alcohol, but would continue to use taxed pure alcohol, from which the Government would derive as much revenue as it does now. The total loss of revenue under the proposed policy of exempting domestic alcohol made unfit for internal use from taxation would not at the utmost exceed \$300,000 per year, while the benefits of such legislation, through the establishment of new industries, the extension of those now in existence, the giving of employment to thousands of workers, the creation of new markets for surplus farm products and the cheapening of hundreds of different articles of general use, thus benefiting the consumers of the whole country, would represent a monetary advantage of tens of millions of dollars.

W. L. C.

The National System of Puttyless Skylights.

A skylight that is storm proof under every condition of wind and weather has hitherto been difficult to secure. The illustrations show a comparatively new system of steel puttyless glazing construction that is well adapted to buildings having large skylight areas. It is the system which will be installed by the New York Central Railroad Company in its new power stations at Yonkers and Port Morris, N. Y., and is controlled by the National Ventilating Company, 1 Madison avenue, New York.

The supporting member, as shown in the longitudinal section in Fig. 1, is a rolled steel bar which offers maximum strength with minimum weight. This bar serves as a support for the glass, with flexible bearings intervening, and at the same time, by its inclosed gutters, provides drainage for any leakage. Upon the supporting bar, shown in the cross sectional detail, and the half-tone, Fig. 2, are mounted longitudinal condensation gutters leading to the eave gutters. These condensation gutters rest upon asbestos fibre cushions, which, in turn, rest upon the supporting bar and afford an even, continuous

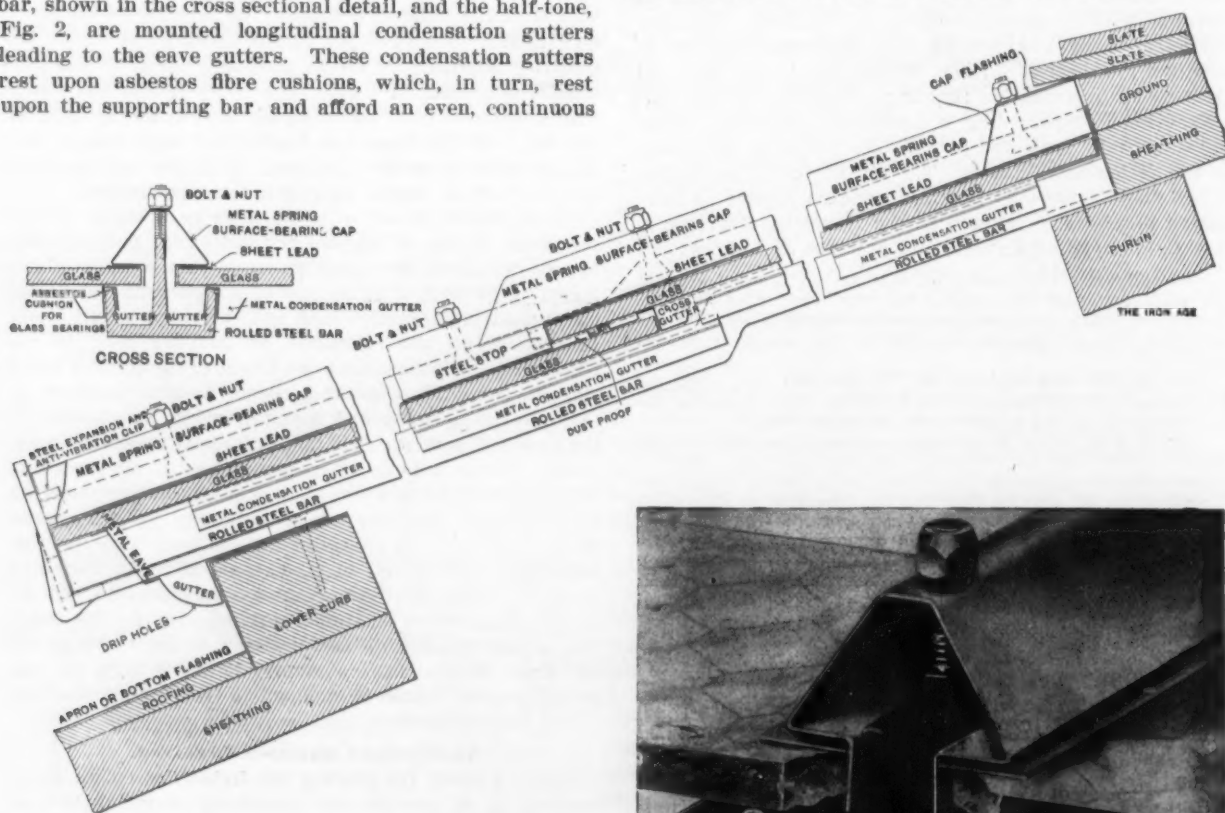


Fig. 1.—Longitudinal and Cross Sectional Details of the System of Steel Puttyless Glazing Construction Controlled by the National Ventilating Company, New York.

and flexible bearing for the glass to rest upon, which tends to conform to any irregularities in the glass.

Two distinctive features of this construction are the elimination of the tendency for the glass to break when contracting or expanding and immunity from leakage. These results are further secured by spring surface bearing caps which have broad bearing surfaces upon the glass with a spring-like action. These caps are provided with vertical lower flanges, which with the flexible cushion bearings prevent the glass from binding or ever coming in contact with rigid surfaces, and at the same time make a permanently tight joint. Another distinctive feature of this system is the use of brass or iron expansion clips, allowing free expansion and contraction of the supporting bar, avoiding the breaking of glass from this cause.

As seen from the longitudinal section in Fig. 1, the supporting bar is offset where the glass laps. The cross condensation gutters, emptying into the drainage gutters of the supporting bars, furnish a dust and weather proof flexible bearing where the glass laps, and with the longitudinal condensation gutters afford ample drainage for all condensed moisture.

In this construction every light of glass is absolutely independent of every other light and can move freely in any direction under contraction, expansion or vibration,

and assume its own position without ever coming in contact with rigid surfaces.

The Coal and Iron National Bank, Liberty and West streets, New York, has re-elected its old Board of Directors with the addition of E. E. Loomis, vice-president Delaware, Lackawanna & Western Railroad. By the election of Mr. Loomis to the Board of Directors the institution has strengthened its relations with prominent coal and railroad interests which were already quite intimate, owing to the presence on the board of representatives of the Central Railroad Company of New Jersey, the Baltimore & Ohio Railroad Company, the Lehigh Valley Railroad Company, the Reading and many affiliated companies. The bank has enjoyed a remarkable growth, having built up a deposit line of money \$5,000,000 in less than two years. It makes a specialty of accounts in the

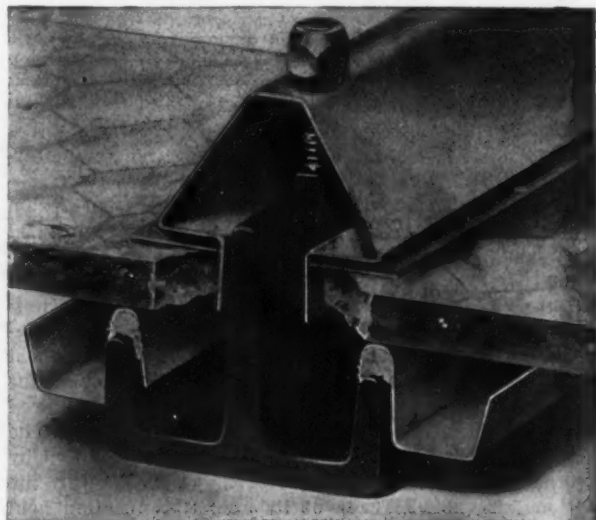


Fig. 2.—Perspective View, Showing Supporting Bar, Condensation Gutters and Clamping Device.

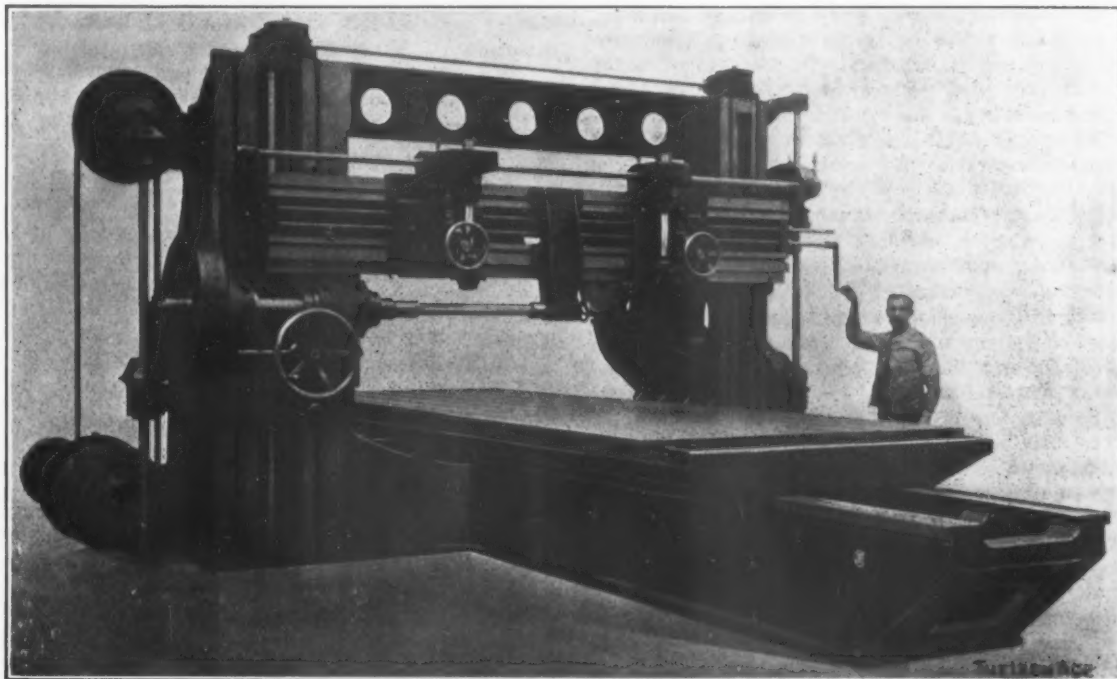
machinery business by reason of its location and affiliations.

President Cassatt of the Pennsylvania Railroad Company has written to the city authorities a letter setting forth in detail the plans of that company for developing its facilities in and about New York City. The improvements which are described in the letter and many of which are well under way are estimated to cost \$100,000,000, of which at least half will be for labor. The company protests against the proposition that in addition to taxes on its right of way, its franchise and such annual payments as may be assessed for the privilege of crossing over or under streets, it should also be required to pay for the right to carry freight to and from the city, the charges suggested at a recent hearing by the engineer in charge of the city Bureau of Franchises.

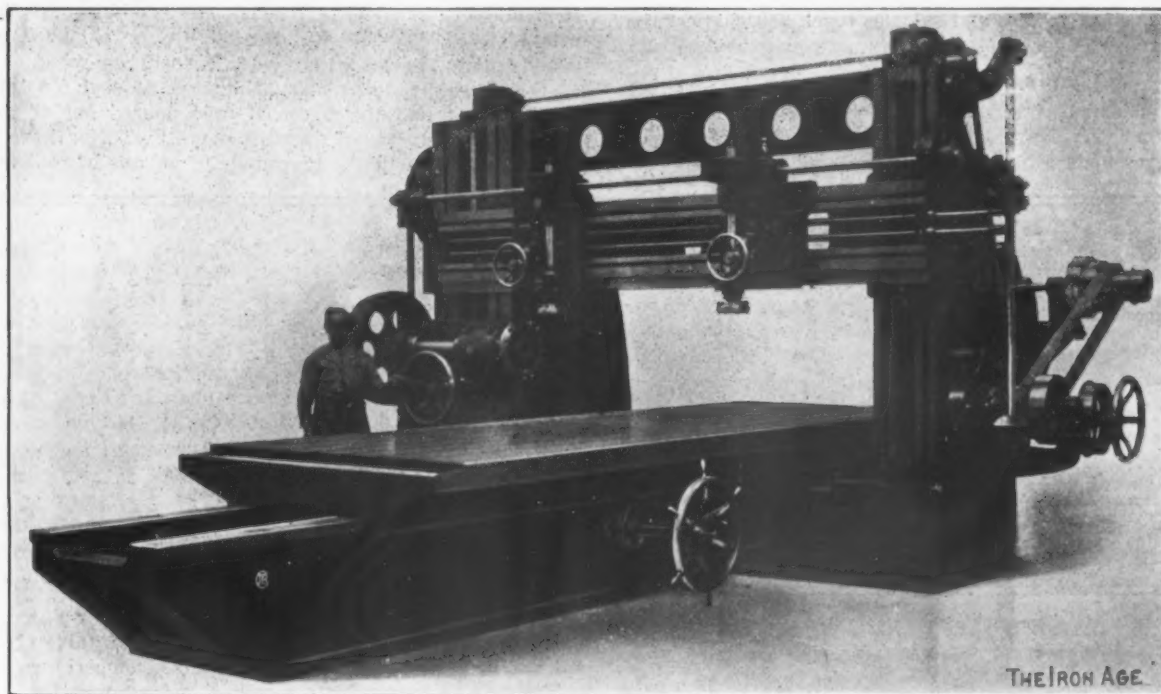
A Large German Universal Milling Machine.

The illustrations show a horizontal and vertical milling machine built by Reinecker of Gablenz, Saxony. The drive for the horizontal cutter spindle and for the feed is from a 75 horse-power electric motor behind the stand. The spindle, which permits 6 inches axial adjustment, is

The driving worm is hardened and has ball thrust bearings. The return is effected by rack and pinion at 20 times the cutting speed. The cutter bolts are secured in the hollow arbor by tension screws and in the cutter arbor by feather and groove; the tension screws serve also for loosening the bolts. For each direction of table feed there are 10 feeds from 0.39 to 9.4 inches per min-



A Horizontal and Vertical Milling Machine Built by Reinecker, Gablenz, Saxony. Showing the Horizontal Spindle with Outboard Support.



Another View of the Milling Machine, Showing Cutter Heads on the Two Vertical and the Horizontal Spindle.

driven by a double gear with ratio of 1 to 16. At its head end there is a conical bearing with pressure rings and at the shaft end a cylindrical concentrically adjustable bearing. The cross side is operated by power from the shaft above or by hand. The two vertical spindles are driven by a special 5 horse-power motor behind the small stand, upon a vertically adjustable bracket. These spindles have an axial adjustment of 5 inches.

The table is 201 x 71 inches, exclusive of the water trough around it, and is driven by a short arbor, which bears in a nut extending the entire length of the table.

ute, and each of these can be used with any of the cutter speeds.

The greatest height of the horizontal arbor from the table is 43 inches; the fixed distance between the vertical arbors, 10 inches; the maximum distance between the lower face of the vertical arbor and the table 49½ inches, and the space between the uprights is 104 inches. There are five speeds for the horizontal arbor, from 8 to 45 revolutions per minute, and four for the vertical, 22 to 90 revolutions. The machine weighs 60,500 pounds approximately.

Modern Problems in Gas Engineering.*

BY FRED B. WHEELER.

A century of effort has been expended on artificial gas manufacture. In hastily surveying the directions in which this effort has been expended, we see that the field has been divided in the various improvements made, between English, Continental and American engineers. Nearly all changes in the manufacture of coal gas have come from our foreign brothers. In the field of water gas manufacture and purification, America holds the palm. In producer gas work, the honors are evenly divided, and in the development of the by-product coke oven, the Continental engineers have done most of the work.

The gas industry has always been conservative and to a most singular degree, in this country until recently, has been mainly in the hands of technically uneducated men. Here lies opportunity. The chances that lie before a technically educated young gas man to-day are numerous as well as promising. Let me impress upon your minds the fact that the mere manufacture and distribution of artificial gas from gas works (so-called), is soon to be only one section of the gas engineer's profession. The installation of producer gas works is upon us, the demand is to be tremendous, and some must be prepared for this important work.

The modification and reconstruction of blast furnaces, where the waste gases are used for boiler firing and for power upon an enormous scale, is an integral part of our profession. The great installations of producer gas in steel mills, metal refineries and electric power houses are bound to grow. The growth of inventiveness is soon to bring into operation a countless host of suction gas producers for small factories, gas engines in ever increasing numbers, and coke oven plants are to be more numerous.

The possibilities are great in this field. The earnings of some gas engineers are very large. I know several whose collective fees and salaries reach \$50,000 per year. The supply of technical men does not equal the demand.

Standard Analyses of Gases.

I present here some standard gas analyses which you will find very convenient for reference. They are actual analyses upon a big scale and made most carefully:

Table of Standard Gases.

Composition.	Solvay.					Morgan producer, bitum.	Wilson producer.	Taylor producer.	Carburized water gas.	Blue gas.	Carburized water gas.	Carburized water gas.	Blast furnace gas.
	Coal gas, English.	Coal gas, American.	Coal gas, German.	Coke oven, 8 c. p.	Coke oven, 16 c. p.								
CO ₂	0.60	1.07	3.01	0.83	1.61	4.0	3.4	4.5	4.6	3.5	0.14	3.8	11.5
C ₂ H ₆	1.00	1.80	1.33	0.45	1.04	...	...	...	...	...	1.53	...	...
C ₂ H ₄	2.47	4.11	3.76	3.70	4.89	...	0.8	...	21.2	...	11.29	14.6	...
O ₂	0.49	0.15	0.65	1.10	0.57	0.60	...	0.6	1.0	...	0.06	...	...
CO	4.23	5.60	8.88	3.00	3.05	25.0	25.3	25.5	14.8	43.4	28.26	28.0	27.5
H ₂	52.22	45.52	46.20	52.10	39.80	19.4	9.2	12.0	18.4	51.8	37.20	35.6	5.0
CH ₄	34.76	37.91	34.02	36.60	39.21	9.6	3.1	1.0	30.7	...	18.88	17.0	...
N	4.23	3.84	2.15	2.70	9.83	41.4	58.2	56.4	9.3	1.3	2.64	1.0	60.0
B. T. U.	635.00	720.00	642.00	648.00	688.70	223.0	155.0	132.0	...	...	650.01	764.0	112.128
Specific grav.	0.46	0.408	0.458	0.40	0.42	...	...	...	...	...	0.591	...	...
Candle power	16.00	18.00	16.00	8.08	15.87	...	...	...	26.0	0.0	22.06	26.0	...

Gross British Thermal Unit per Cubic Foot Conversion Table.

0° C. = 32° F. and 760 millimeters pressure.

H ₂	343
CO	341
CH ₄	1,065
C ₂ H ₄	1,673
C ₂ H ₆	4,011

For 60° F. and 30 inches barometer multiply by $\frac{1}{491.4}$ = 0.002035 for each degree rise.

The table represents English, American and German coal gases, Solvay coke oven gas from Milwaukee and Detroit; Mond, Morgan, Wilson and Taylor producer gases, blue water gas, three different grades of carburized water gas, also blast furnace gas. The tables show

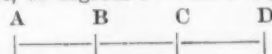
* From a lecture before the engineering students of the University of Wisconsin, published in the *Wisconsin Engineer* for December. Mr. Wheeler is connected with the Semet-Solvay Company, Syracuse, N. Y.

the British thermal units per cubic feet, also the candle power.†

I show a table of gross British thermal units per cubic feet for 0 degree C. and 760 mm. The volume per cents. of the chemical components multiplied by the factor will give, when all are added together, the gross British thermal units. To change the volumes to 60 degrees F. multiply by the factor shown per degree.

The magnitude of the volumes produced in the operation of some modern gas works will, I hope, rivet your attention.

At a certain works it was proposed to measure daily, at the point D, 90,000,000 cubic feet of gas at the standard temperature, 60 degrees F = 15.5 degrees C.



A Great Machinery and Hydraulic Problem.

This gas produced at A would have actually at the B point, where it enters the machinery, the temperature 212 degrees F. = 100 degrees C., the temperature of boiling water. On account of the peculiar properties of water vapor tension, the volume of this gas, if saturated, would be the enormous quantity of 3,375,000,000 cubic feet. This mass of gas would have to be cooled down to the required volume, 90,000,000 cubic feet, at D. In other words, it would be reduced in bulk 37½ times under this condition. Every piece of machinery between B and D under this condition would have to be designed to handle this mass scientifically as well as practically. About 640,000,000 gallons of water would be required, and this would need a centrifugal pump station of 30,000,000 gallons per hour capacity.

In cooling down this gas we run against the vapor tension of ammonia at the point C, and extract there the ammonia liquor. The water thus produced there daily is the equivalent of 90 tank cars of 6000 gallons each and it has to be distilled daily to a reduced bulk of three tanks; 3,000,000 cubic feet of gas per day, and 30 to 36 tank cars of liquor are handled daily now. At the point B, a mass of gas whirls through the machinery at the rate of 2,343,000 cubic feet per minute, or as much as would supply the capital city of Wisconsin one week.

I have said nothing about the acres of coal fed into the furnaces, and the rivers of coke poured out of the furnace doors to round out this operation. Nor have I said anything about the thousands of gallons of coal tar

and benzol that have to be cared for at this point. A large quantity of this gas is washed in a veritable river of hydrochloric acid, the strength and temperature of which has to be carefully watched and allowed for. A part of the gas is cleansed of sulphur impurities in beds of oxide of iron, and a part is washed in heavy oil to absorb benzol, the gas being required for different purposes. The capital cost of this plant runs into the millions.

At the point B to C is a place where it is quite possible to make large improvements in the first cost of installation, and also in the operation cost, by a change to an entirely new principle, the principle of mechanical condensation by rotary centrifugals. This mechanical condensation is being accomplished in several different ways in Europe, and American engineers are now thinking it over. I believe two or three experimental trials are be-

† For additional data see *Journal of Society of Chemical Industry*, June, 1905, pp. 592-604.

ing made here now. Personally I have given a great deal of study to the idea of the extraction of tarry and aqueous matters by rapid rotation, especially in helicoidal screws.

Gas engineers have now before them several important general engineering problems. They are:

1. Vertical retort distillation of coal.
2. Modified coke ovens inside of retort houses.
3. The high pressure distribution of gas.
4. Gases for power.
5. Producer gas development.
6. Chemical treatment of residuals.
7. Naphthalene recovery.
8. Benzol enrichment of lean coal gases.
9. Proper condensation.
10. The development of large unit gas engines for central station work.

Evolution of the Retort Furnace.

As an example of evolutionary growth in one item of gas works manufacture—the retort furnace—I will run over the line of development that has led up to the vertical retort. The retorting of coal began with a gradual succession of one, two, three, four, five and six retorts in a furnace, called a bench. The retorts were first of iron, then of clay, heated by an open fire. Benches of fours and sixes of this type are to-day in extensive use. They consume from 20 to 33 per cent. of the coke produced. These furnaces receive the air in the combustion chamber but slightly heated.

Recuperative and regenerative furnaces were next made, and the number of retorts increased from six to eight, nine and ten per bench. The air supplied to the fire in the combustion chamber was highly heated by the waste heat products of combustion before passing to the chimney. In the German Munich patent benches with the fire outside the bench in a generator, long runs of as low as 16 per cent. of coke made consumed as fuel have been made, the yields per bench of these standard sizes running to 72,000 cubic feet per bench per day.

The next stage was inclined retorts, elaborate affairs, the retorts being tilted at an angle of inclination proper for hot coke to slide down and out, when suitably burned. A good installation is to be seen at Louisville, Ky., also in Brooklyn. These produce 100,000 cubic feet or more to the bench.

The coke oven in the shape known as the by-product coke oven came in ahead of the inclines. It is a successful producer of gas as well as coke on a large scale. A coke oven of this type is now built 35 x 8 x 16 feet, holding 7¼ tons of coal, which is burned off in 18 to 20 hours, producing 9000 feet of gas per ton from coals only partially gas coals.

The next scheme was to house these ovens on a smaller scale in retort houses. Three installations of these are now on trial in Germany. Simultaneously with this development was revived a very old idea, of having the retorts vertical. Six experimental installations have been tried out successively at Dessau. At present 20 verticals there produce an average of 14,500 cubic feet of 13 candle-power gas each, or 193,333 cubic feet per man, it only requiring one and one-half men practically to run the carbonizing plant.

This system produces better coke, more ammonia, more and better tar, with less labor than does any other known form. The improvement is bound to be a success and will surely spread in use. These retorts are built in blocks of ten, with one generator, which only has to be fed with coke once in 24 hours and clinkered once in 48 hours. The fuel consumption is 20 per cent. of the coke produced. A plant is now also being built in Berlin. The remarkable fact is shown that the retort temperature is 1400 degrees C., yet the waste gases escape at only 310 degrees C.

The plan is also used of putting two retorts into one, by setting the retorts end to end, the benches being built back to back, knocking out the back walls. Thus two 10-foot retorts are made into a 20 or 22 foot retort. They cease to be charged by hand. Coal is fed in and coke pushed out by machinery. A fine example of such retorts is to be seen at the Milwaukee Gas Works. The question of long life of retorts and low repairs is a most vital one. Coking time is an important factor. English

practice runs from five to eight hours. American practice runs from four to five and one-half hours. Coke ovens practice runs from 18 to 24 hours. Verticals practice runs from eight to ten hours.

Europe's Emulence in Gas Engineering.

Outside of the large cities like New York, Philadelphia, St. Louis, Boston, Detroit, Milwaukee, Cincinnati and Louisville, Ky., there are few noteworthy gas engineering achievements in this country. It is to Europe we must turn for examples of engineering on a great scale in gas works, especially in Great Britain and Germany.

Dessau, Germany, has a noteworthy record. Here was installed the first retort setting fired with producer gas 30 years ago. Here was installed the first electric station run by gas engines 20 years ago. Here was installed the first tramway with gas locomotives 10 years ago, and now there is being installed the first successful vertical retorts. Magdeburg, Germany, first made a very low candle power gas of high heat units, and distributed it to the whole city, using Welsbach mantles—abolishing completely open flame burners. Vienna and Berlin have taught the world how to construct inclines. Brussels has shown us marvels in residual recovery, and in Great Britain we have a blaze of gigantic installation of the greatest feats of engineering, Sheffield leading the world with 26-cent gas.

The high pressure distribution of gas through large cities, and from centers of population to outlying towns, which would otherwise have either to go without gas, or suffer a higher price by the operation of a separate works, occupies a commanding position in the minds of all gas engineers, as well as the thoughtful attention of investing capitalists.

The Chester B. Albree Iron Works Company.

The Chester B. Albree Iron Works, established in Allegheny, Pa., in 1885, and very prominent as a manufacturer of bridge railings and ornamental iron work for railroads and buildings, also as manufacturer of the Pittsburgh pneumatic riveter, has been recently incorporated under a Pennsylvania charter. Additional capital and the erection of a large addition to the works on adjoining land, together with new equipment of the very latest design high speed precision machine tools, will enable the new company, which will be called the Chester B. Albree Iron Works Company, to continue the old lines of work to much greater advantage and to take up the manufacture of the inertia valve pneumatic tools, invented by Chester B. Albree, which the old company has spent three years in perfecting. The chipping and riveting hammers will be put on the market as soon as the additions to the plant will admit. Experts who have seen them in operation in the works during the last year, under regular, hard service conditions, speak very highly of their efficiency of action and simplicity of design.

The new company not only starts with the old members of the firm, Chester B. Albree and Ralph Albree, each thoroughly familiar with every detail of the business, but has as its vice-president Sumner B. Ely, who was formerly chief mechanical engineer of the American Sheet & Tin Plate Company. His thorough knowledge of engineering and wide acquaintance with manufacturers and engineers will add greatly to the high character of the management. Among the directors and stockholders are Reuben Miller of the Crucible Steel Company, C. F. Holdship, president of the Equitable Meter Company and Frederick G. Ely of the Pressed Steel Car Company, as well as other well known business men and capitalists. The capital stock, paid up, is \$200,000, and the offices and works will be at the old location, 1116 to 1202 Market street, Allegheny, Pa.

The Lackawanna Steel Company will put in blast its sixth furnace at Buffalo on the completion of a heavy pump installation—a third Nordberg pump of 20,000,000 gallons capacity—probably in the latter part of February. One of the company's furnaces which was blown out in December for repairs went in last week.

The Handling of Tool Steel.*

BY ARTHUR STOCKALL.

When any number of tools are to be made I have found it a good practice to forge the tools first and let them get quite cold before tempering them. I work the steel at as low a heat as possible and as quickly as possible, but not with a heavy blow as is sometimes given by careless workmen under a steam hammer, as this destroys the grain by crushing it. Consequently when the steel is tempered, it will develop what are called tempering cracks. It is better to forge the tools with a sledge or a belt hammer, such as a medium sized Bradley hammer, as with these the tool can be shaped without injuring the texture of the steel. To temper the tool I heat it just hot enough to give it sufficient hardness, plunging it in a cooling mixture, gradually down to the upper end of the red, then pulling it out gradually. This will give a tapering from a low red at the upper end to a cold point, leaving the tool without any or with but very little contracting strain. Then I ease off the temper to the desired color, and generally speaking, if the steel is of an ordinary good quality the tool will be good. This is our practice for lathe, planer and slotter tools, twist drills, reamers, rose bits and like tools made out of high carbon steel. Miller cutters and such tools we forge the same way, but in tempering we use a small charcoal furnace, and lay our tools in the furnace on a good bed of fresh red coals; then we put more coal on top of them and close the door of the furnace, letting the cutters get hot as the coal burns up, while the tool dresser is at work on other tools. When the cutter becomes hot we plunge it into a tempering liquid slightly heated. To draw the temper we place a piece of ordinary plate iron on the bed of charcoal which is left in the furnace. The cutter is then placed on this plate until it is slowly heated throughout. It is surprising how nicely this method will draw the color.

High Speed Tools.

For high speed tool making we have five different makes of steel, and they all have their own little peculiar differences of texture, consequently a little different way of working is necessary. These little points of difference have to be picked up by the tool maker. In forging a tool we generally follow the directions given us by the manufacturers of the steel, but in hardening the tool is where the difficulty lies, for I have found that this kind of steel deteriorates rapidly by tempering; that is, it gets soft in its texture as though some of its chemical parts have lost their cohesion, after two or three times tempering. This is due, I think, to the high heat necessary for hardening by air blast. The point for us to discover is, how to harden this steel at a low heat and thus preserve its quality. I have tried the ordinary tempering mixture and also warm water. The steel will crack easily. With oil it is better, but not hard enough for hard tires and ends like the air blast in a softer tool.

Tempering with Lower Heats.

I am now experimenting with a liquid that certainly makes the tool hard enough at a greatly reduced heat. Whether it will keep its cutting power I am not prepared to say at present; but our practice is for lathes, planers and such machines, and where the speed is high and the material difficult to harden in an air blast at white sweating heat. For wheel boring cutters I have an air blast made of copper pipe which straddles the tool. This is softened to make it bend easily, so that it can be readily adjusted to suit any length of tool. I also have a pair of tongs with broad jaws with which I grip the tool in the middle and put it in the fire and heat only both ends. I then place the cutters between the ends of the blast pipe and gradually turn on the air. This cools off both ends at once, leaving the center at its usual temper, and I must say that the tools made in this way work splendidly. For taps, reamers, twist drills, miller cutters and like tools that have to be finished to a cutting edge before tempering I have used the lead

bath for heating and cooling in air where convenient and in oil when necessary; but when air is used great care must be taken or the fine edge will be blown off. The lead bath, where only one or two pieces are to be tempered, is very slow and inconvenient. I have found the following plan very good in this kind of work. I mix some fire clay very thin, almost to a liquid; then I heat the tools just warm, not red, and dip them in the fire clay; then I pull them out and let them dry, which only takes a short time. Repeat this until you have a layer of clay on the tools sufficient to protect them from the heat of the fire or blast— $\frac{1}{16}$ or $\frac{1}{8}$ inch thick is plenty. Then place them in the fire and heat them to the desired point and cool them by a blast or in an oil bath.

The Coates Angle Drive.

There are many places in shops and mills where an angle drive will permit utilizing vacant floor space, or otherwise be of advantage to the owner. The angle drive illustrated, which is made by the Coates Clipper Company, Worcester, Mass., is not restricted to the right angle pattern shown in Fig. 1, but may be built for any

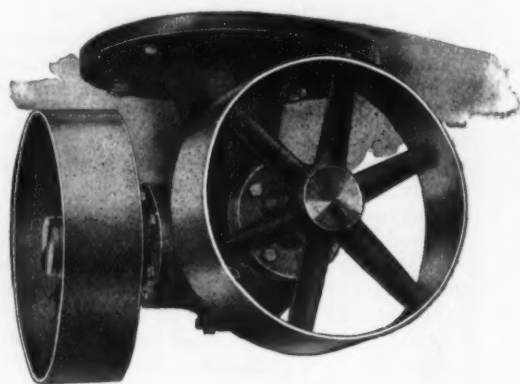


Fig. 1.—A Right Angle Drive Made by the Coates Clipper Company, Worcester, Mass.

desired angle, the transmission being through a flexible jointed shaft. As will be seen from Fig. 2, each end of the flexible shaft runs in a bearing and a third bearing is provided for the central link. The three bearings are parts of the fixture, giving complete rigidity. The end bearing is of cast iron and forms a quill, upon which a steel sleeve runs, which is loosely keyed to the shaft and carries the pulley. By this arrangement the shaft

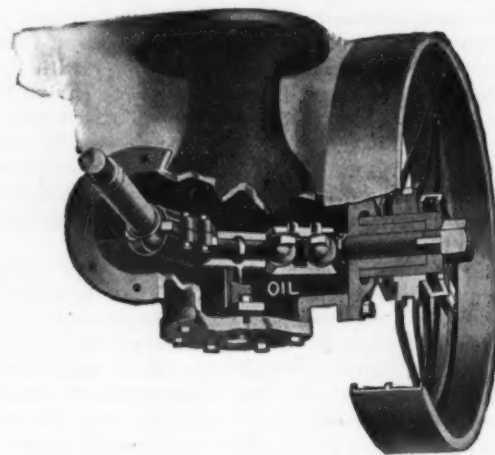


Fig. 2.—A Broken Section Showing the Ball Jointed Shaft.

is relieved of belt strain, which tends to preserve its alignment and prevents vibration. The flexible shaft runs in a bath of oil to provide perfect lubrication and is of the standard type of ball and socket design, nickel steel throughout, including the driving pins. The angle drive is built in sizes to transmit from 2 to 150 horsepower and many are equipped with two pulleys, as shown in Fig. 1, or with one end coupled to an extension spindle or a line shaft.

* From a paper read before the National Railroad Master Blacksmiths' Association. Mr. Stockall is master smith at the shops of the Inter-Colonial Railroad at Moncton, N. B.

The Lunkenheimer Improved Safety Water Column.

Extended use is claimed to have proved the positive reliability of the Vigilant safety water column made by the Lunkenheimer Company, Cincinnati, Ohio. The column is so constructed that an alarm is automatically sounded when the water in the boiler approaches the low or high danger limit. It not only safeguards the boiler and its attendants, but has demonstrated its ability to effect a substantial economy in fuel. This is accomplished by carrying the water in the boiler at the lowest constant level consistent with absolute safety, which increases the steam space in the boiler, produces more steam, hence steadier power, and decreases the consumption of fuel. Water carried continuously at the proper level lengthens the life of a boiler and consequently decreases the amount of repairs necessary.

The columns have gauge cock holes tapped on both sides, so that they can be used as either right or left hand patterns by transposing the plugs and cocks. If repairs are necessary, only the cap B, Fig. 1, need be removed to render all working parts accessible. It is not necessary to take down the entire column or even to remove the water gauge or gauge cocks. A single strong seamless copper float is used which is of a form and size calculated to insure a positive operating of the signal valve upon the approach of the low or high danger limit. The floats are carefully



Fig. 1.

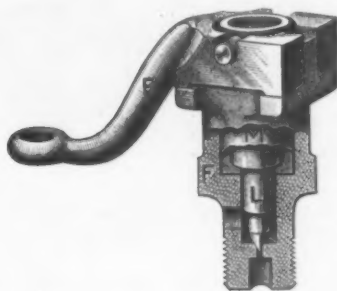


Fig. 2.

The Vigilant Safety Water Column Made by the Lunkenheimer Company, Cincinnati.

tested and will not collapse under 350 pounds pressure. The sediment chamber H is a valuable adjunct to the column, inasmuch as it collects the dirt, scale, &c., that would otherwise enter the water gauge fittings and gauge cocks. A drain can be provided in the bottom of the chambers to discharge the collected sediment.

The operation is as follows: To the float C is rigidly attached the rod D, which operates through a hole in the valve lever E. The stop J, which can be placed anywhere on the rod D, strikes the valve lever E when the water in the boiler reaches too high a level. Referring to the detail Fig. 2, it will be seen that as the valve lever E is raised it lifts the valve L from its seat, allowing the steam from the connection at the top of the cap to pass through the seat opening and thence to the whistle. A similar result takes place when the water becomes too low in the boiler. When the float falls the knob K, on the rod D, forces the valve E down, which also opens the valve, allowing steam to reach the whistle.

The columns are made in various sizes suitable for different types of boilers.

The Indiana Harbor Railroad was formally opened to traffic January 22. It is 100 miles long, and is controlled by the Lake Shore and Michigan Central, which furnished the money to build it. It cost \$7,000,000, and runs from Lake Michigan, near Chicago, to the rich Danville, Ill., coal fields. The two roads controlling it have purchased 75,000 acres of coal lands in this district.

British Standards for Materials of Construction.

The Engineering Standards Committee of Great Britain recently issued a report giving a summary of its work up to the present time. It is of interest in the United States in view of what is being done in similar lines by the Standards Committees of the American Society for Testing Materials. The committee was appointed in January, 1901, by the Council of the Institution of Civil Engineers. Later the Institution of Mechanical Engineers, the Institution of Naval Architects and the Iron and Steel Institute joined hands with the older society with a view to widening the scope of the work. The subjects which have been or are now under consideration are the following: "Rolled Sections," "Railway and Tramway Rails," "Locomotives for Indian Railways," "Pipe Flanges," "Screw Threads," "Pipe Threads," "Limit-Gauges," "Railway Rolling-Stock Material," "Tyre Profiles," "Steel Castings and Forgings for Marine Work," "Portland Cement," "Cast-Iron Pipes," "Generators," "Motors and Transformers," "Prime-Movers for Electrical Purposes," "Physical Standards," "Telegraph and Telephone Material," "Electric Cables," "Electric Tramway Materials," "Electric Automobiles," and "Electric Plant Accessories."

Something can be judged of the work accomplished by the list of publications the committee has issued. They are as follows: (1) List of British Standard Sections; (2) Specifications and Sections for Tramway Rails and Fish Plates; (3) Report on Influence of Gauge Length and Section of Test Bar on the Percentage of Elongation; (4) Properties of Standard Beams; (6) Properties of British Standard Sections; (7) Standard Tables of Copper Conductors and Thicknesses of Dielectric; (8) Standard Specification for Tubular Tramway Poles; (9) Standard Specification and Sections of Bull-Headed Railway Rails; (10) Standard Tables of Pipe Flanges; (11) Standard Specification and Sections of Flat-Bottomed Railway Rails; (12) Standard Specification for Portland Cement; (13) Standard Specification for Structural Steel for Shipbuilding; (14) Standard Specification for Structural Steel for Marine Boilers; (17) British Standards for Electrical Machinery; (18) Forms of Standard Tensile Test Pieces; (19) Temperature Experiments on Field Coils of Electrical Machines; (20) British Standard Screw Threads; (21) British Standard Pipe Threads for Iron and Steel Pipes and Tubes; (22) Report on Effect of Temperature on Insulating Materials. Standard templates have also been issued for tramway rails, bull-headed rails, flat-bottomed rails and pipe flanges. Government co-operation in the work has been secured, the first appropriation being £3000 for 1903-1904. This appropriation was renewed for the year 1904-1905, and for 1905-1906. The Government has now promised to continue a smaller appropriation for the next three years.

A Great Building Record in 1905.—The *Construction News* has compiled statistics showing that in 1905 permits were taken out in 26 of the principal cities of the country for the construction of buildings aggregating in cost \$528,186,412, against \$375,571,130 for 1904, a gain of \$152,615,282, or 40 per cent. This is a remarkable showing, and the *Construction News* says that nothing like it has been seen before in this country. The expectations for 1906 are even for a greater investment in new buildings than in 1905. In New York the total of building permits represents \$218,893,543, or \$62 per inhabitant; in Chicago, \$70,989,900, or \$32 per inhabitant; in Los Angeles, \$15,331,607, or \$150 per inhabitant; in Pittsburgh, \$16,245,047, or \$50 per inhabitant. In Chicago the gain over 1904 was 32 per cent.; in New York, 60 per cent.; in Philadelphia, 37 per cent.; in St. Louis, 65 per cent., and in Los Angeles, 15 per cent. The increase in some of the smaller cities was quite marked, being 78 per cent. in Indianapolis, 95 per cent. in Columbus, Ohio; 95 per cent. in Louisville, 58 per cent. in Denver, 57 per cent. in Detroit and Kansas City, 61 per cent. in Washington, 52 per cent. in Cincinnati and St. Paul, and 48 per cent. in Cleveland.

Fluctuations in Metal Prices from 1894 to 1906.

[With Supplement.]

We present in the accompanying chart the fluctuations in prices in the New York market of the more important metals during the period from 1894 to 1906. It has been necessary in order to condense the volume of the chart to give three columns of figures. One column represents the price of pig tin in cents per pound, another the price of lake copper in cents per pound, while the third column gives the price of spelter and lead in cents per pound and tin plates per full weight box in dollars. These prices are computed as monthly averages from the prices given in the New York metal report in this paper week by week.

1894.	Copper.	Spelter.	Lead.	Tin.	Tin
Months.	Cents.	Cents.	Cents.	Cents.	Plate.
January	10.12	3.50	3.12	20.20	5.27
February	9.78	3.75	3.18	19.67	5.22
March	9.56	3.83	3.24	18.82	5.20
April	9.50	3.62	3.21	19.80	5.19
May	9.37	3.48	3.19	19.97	5.15
June	9.06	3.46	3.10	19.60	5.15
July	9.12	3.50	3.10	19.07	5.12
August	9.06	3.45	3.17	18.34	5.12
September	9.34	3.46	3.07	16.20	...
October	9.69	3.45	3.02	15.37	4.12
November	9.48	3.38	3.00	14.38	4.09
December	9.77	3.26	3.00	13.79	4.00
1895.					
January	9.55	3.32	3.07	13.47	3.95
February	9.67	3.15	3.10	13.42	3.90
March	9.39	3.20	3.10	13.57	3.87
April	9.53	3.27	3.08	14.00	3.80
May	10.25	3.47	3.16	14.53	3.75
June	10.69	3.71	3.28	13.94	3.75
July	10.81	3.70	3.32	14.17	3.80
August	12.10	4.07	3.52	14.26	3.80
September	12.37	4.26	3.37	14.37	3.80
October	11.92	4.16	3.33	14.60	3.80
November	11.37	3.68	3.23	14.46	3.80
December	10.56	3.49	3.26	13.81	3.80
1896.					
January	9.97	3.88	3.07	13.16	3.50
February	10.62	4.07	3.16	13.37	3.47
March	11.03	4.14	3.16	13.35	3.37
April	10.78	4.13	3.06	13.39	3.40
May	10.99	4.08	3.04	13.52	3.39
June	11.65	4.05	3.01	13.45	3.40
July	11.27	4.12	2.97	13.51	3.44
August	10.87	3.81	2.74	13.34	3.44
September	10.75	3.64	2.71	13.17	3.44
October	10.70	3.71	2.77	12.72	3.41
November	11.25	4.03	2.92	13.04	3.41
December	11.40	4.17	3.04	12.87	3.40
1897.					
January	11.78	4.02	3.05	13.26	3.40
February	12.00	4.06	3.22	13.47	3.09
March	11.87	4.12	3.39	13.40	3.02
April	11.50	4.11	3.33	13.23	3.20
May	11.97	4.17	3.26	13.37	3.22
June	11.03	4.25	3.30	13.69	3.20
July	11.10	4.27	3.68	13.92	3.06
August	11.12	4.28	3.81	13.86	3.10
September	11.25	4.14	4.12	13.71	3.16
October	11.12	4.10	4.12	13.74	3.11
November	10.84	3.89	3.81	13.77	3.10
December	11.07	3.75	3.70	13.68	3.09
1898.					
January	11.00	3.75	3.66	13.77	3.05
February	11.19	3.79	3.69	14.04	3.02
March	11.95	4.00	3.71	14.26	2.90
April	12.05	4.00	3.61	14.41	2.90
May	12.04	3.95	3.64	14.54	2.89
June	11.85	4.65	3.86	15.05	2.85
July	11.59	4.51	3.95	15.60	2.84
August	11.85	4.35	3.99	16.14	2.82
September	12.25	4.62	3.99	16.02	2.85
October	12.37	4.61	3.81	17.25	2.75
November	12.69	5.09	3.70	18.07	2.80
December	12.79	5.13	3.62	18.20	2.89
1899.					
January	14.02	4.90	4.02	22.12	3.11
February	17.06	5.68	4.53	24.25	3.50
March	17.55	5.99	4.37	23.86	4.03
April	18.56	6.25	4.30	24.82	4.10
May	18.65	6.72	4.42	25.61	4.05
June	18.20	6.02	4.45	25.69	4.05
July	18.37	5.79	4.55	28.72	4.38
August	18.50	5.55	4.56	31.40	4.60
September	18.47	5.40	4.60	32.40	4.82
October	18.03	5.37	4.59	31.35	4.82
November	17.00	4.64	4.58	28.52	4.83
December	16.69	4.68	4.65	25.19	4.84

1900.

January	16.21	4.55	4.70	26.00	4.84
February	16.25	4.69	4.70	29.71	4.84
March	16.41	4.60	4.70	32.42	4.84
April	17.00	4.71	4.70	30.85	4.84
May	16.80	4.52	4.22	29.25	4.84
June	16.31	4.27	3.90	30.00	4.84
July	16.31	4.24	4.03	32.76	4.84
August	16.55	4.17	4.26	31.13	4.84
September	16.75	4.10	4.36	29.63	4.68
October	16.73	4.10	4.37	28.46	4.19
November	16.75	4.20	4.37	28.10	4.19
December	16.87	4.19	4.37	26.84	4.19

1901.

January	16.90	4.08	4.37	26.60	4.19
February	16.97	3.94	4.37	26.55	4.19
March	17.00	3.89	4.37	25.95	4.19
April	17.00	3.94	4.37	25.94	4.19
May	17.00	3.97	4.37	26.82	4.19
June	17.00	3.95	4.37	28.22	4.19
July	16.97	3.90	4.37	27.41	4.19
August	16.50	3.92	4.37	26.90	...
September	16.50	4.02	4.37	25.04	4.19
October	16.71	4.20	4.37	24.62	4.19
November	16.82	4.32	4.37	27.47	4.19
December	14.71	4.35	4.19	24.39	4.19

1902.

January	11.45	4.28	4.02	23.38	4.19
February	12.47	4.18	4.10	24.73	4.19
March	12.12	4.29	4.10	26.16	4.19
April	11.97	4.41	4.10	27.29	4.19
May	12.10	4.50	4.10	29.26	4.19
June	12.23	4.88	4.10	29.29	4.19
July	11.94	5.23	4.10	28.28	4.19
August	11.59	5.46	4.10	28.14	4.19
September	11.60	5.45	4.10	26.55	4.19
October	11.71	5.48	4.10	25.76	4.19
November	11.44	5.29	4.10	25.43	3.79
December	11.61	4.91	4.10	25.33	3.79

1903.

January	12.13	4.82	4.10	27.76	3.79
February	12.80	5.00	4.10	29.14	3.79
March	14.31	5.36	4.44	30.06	3.99
April	14.85	5.65	4.59	29.69	3.99
May	14.75	5.75	4.37	29.36	3.99
June	14.56	6.00	4.25	28.30	3.99
July	13.73	5.95	4.12	27.60	3.99
August	13.35	5.94	4.12	28.00	3.99
September	13.58	6.00	4.26	27.06	3.99
October	13.42	6.05	4.40	25.83	3.99
November	13.25	5.68	4.25	25.35	3.84
December	12.30	5.15	4.10	27.53	3.79

1904.

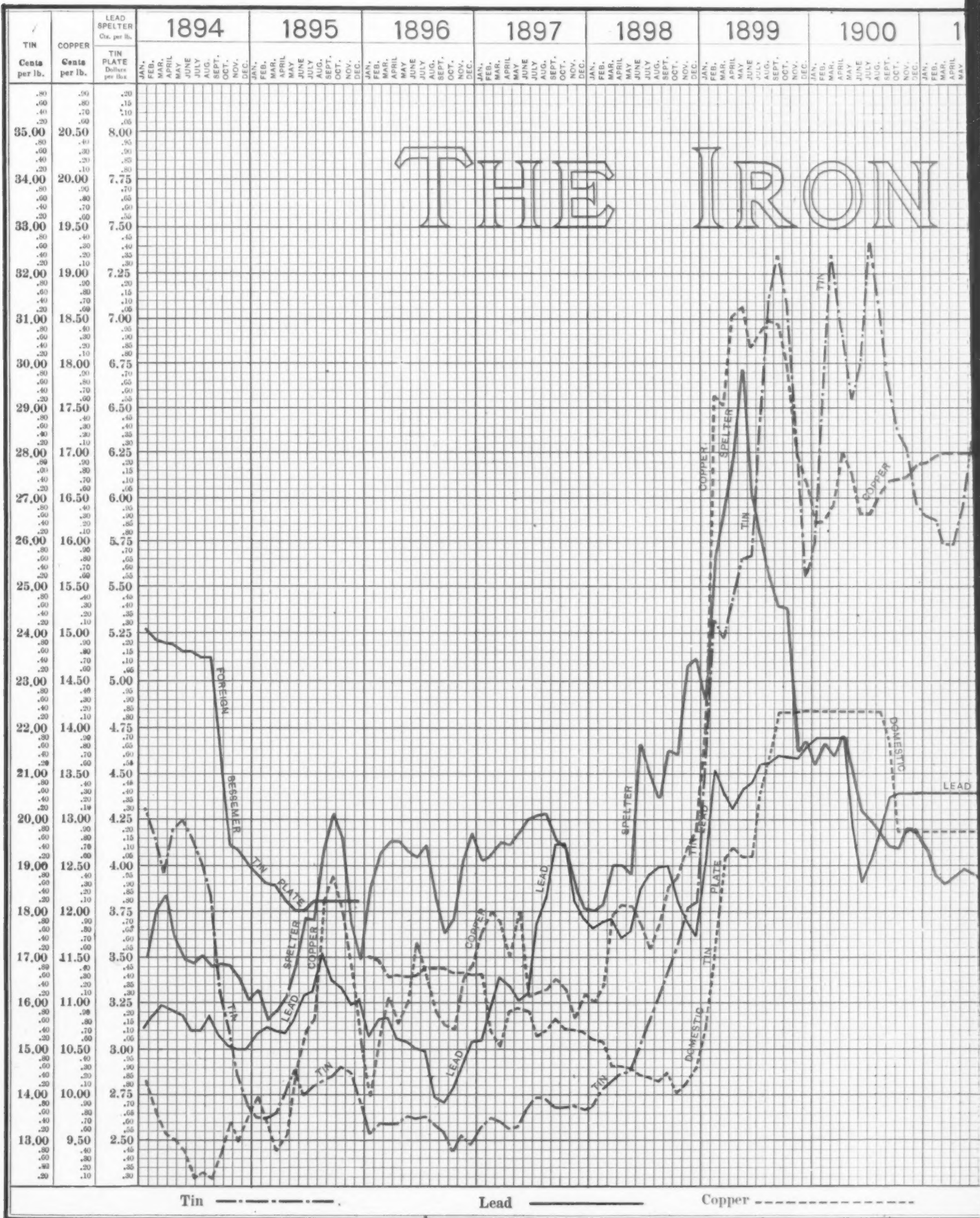
January	12.62	4.95	4.39	28.75	3.75
February	12.34	4.95	4.40	27.98	3.64
March	12.60	5.05	4.50	26.19	3.64
April	13.19	5.22	4.50	27.99	3.64
May	13.28	5.14	4.48	27.76	3.64
June	12.74	4.79	4.22	26.14	3.64
July	12.62	4.85	4.17	26.28	3.60
August	12.50	4.85	4.15	26.74	3.49
September	12.67	5.06	4.20	27.27	3.49
October	13.09	5.17	4.20	28.53	3.49
November	14.22	5.49	4.51	29.00	3.56
December	14.87	5.80	4.60	29.27	3.66

1905.

January	15.18	6.17	4.56	29.18	3.74
February	15.25	6.12	4.50	29.49	3.74
March	15.25	6.06	4.45	29.21	3.74
April	15.18	5.97	4.50	30.43	3.74
May	15.00	5.55	4.50	30.04	3.74
June	15.00	5.32	4.51	30.36	3.74
July	15.03	5.38	4.56	31.71	3.74
August	16.07	5.66	4.64	32.85	3.74
September	16.12	5.83	4.85	32.21	3.74
October	16.62	6.05	5.07	32.47	3.55
November	16.90	6.17	5.48	33.46	3.53
December	18.75	6.50	5.96	35.84	3.59

It is interesting as well as instructive to note the fluctuations of copper. The price was firmly maintained on the 17-cent basis during 1900 and 1901, followed by a sudden drop at the end of 1901 when the manufacturers' load became too heavy to carry. The upward tendency stopped in the middle of 1904, but was continued throughout 1905, at the close of which the metal stood at a price very nearly reaching the highest point in recent years. The steady advance of pig tin during the year 1905 is also of more than passing interest.

The Robins Conveying Belt Company has recently opened an office in the Frick Building, Pittsburgh, Pa. G. R. Delamater, its resident engineer, is prepared to receive inquiries from the vicinity of Pittsburgh, relating to conveying and hoisting machinery.



Fluctuations in the Prices of Copper, Lead, Tin New York from 1894 to 1904



er, Lead, Tin, Spelter, and Tin Plate in
om 1894 to 1906.

The Scotch Iron and Steel Trades.

GLASGOW, January 13, 1906.—The Scotch steel makers met this week to discuss the situation and to consider whether or not any further advance should be made in prices. The current quotation here for steel ship plate is £7 2s. 6d. per ton less 5 per cent. (although orders are said to have been refused for early delivery at £7 5s. per ton), with other material in proportion. As hematite pig iron has been advanced by makers to 75 shillings per ton, it was contended that steel makers are entitled to put up their prices again. But to advance steel prices would be to stimulate smelters to ask still more for hematite, and, moreover, high prices for plates and angles would undoubtedly check business. In fact there is quite sufficient evidence that the last advance in ship plates has put a stopper for the present on the flow of orders for new ships. So the Scotch steel makers decided to make no change at present in their quotations, and in this they are wise. Across the border the iron manufacturers have this week increased the price of bar iron 5 shillings per ton in the Cleveland district and 2 shillings 6 pence per ton in the Lancashire district, making the rate now in both districts £7 5s. per ton less 2½ per cent. The Scotch iron manufacturers retain their quotation for iron bars at £7 2s. 6d. per ton less 5 per cent., being averse to putting any damper on trade when receiving a remunerative price.

Since the new year opened there has been remarkable strength and active buying in pig iron warrants, although consumption has been locally restricted by the New Year holidays, which in many works have been extended to this week. Under active buying Cleveland warrants were raised to 55 shillings 3 pence cash, 55 shillings 6 pence one month and 56 shillings 3 pence three months. On realization prices fell off from these figures about 6 pence per ton about the middle of this week. Several of the sales of Cleveland this week and last have been ascribed to the last member of the May corner, who has been holding his share of the divide until now. The selling prices current must leave a large margin on the average of the corner purchases, but the margin will not be great after store rent and interest for the best part of a year are deducted. Scotch warrants have marked 58 shillings 9 pence and West Coast hematite warrants 72 shillings 6 pence since the year opened, the latter especially being stimulated by the cable advices of renewed strength of the American steel market.

The effect of the corner in Cleveland pig iron last year is now emphatically expressed in the trade statistics. At the close of 1905 there were 649,290 gross tons of No. 3 in the warrant store as compared with 191,827 tons at the close of 1904. The increase is entirely due to the high price to which warrants were driven by the bull operators. In spite of the trade demand for hematite it has paid the smelters better to make foundry iron to place direct in store and convert into warrants. Smelters have taken advantage of the opportunity made by the bull operators, but in so doing have created a stock which will operate against them in the future. It is true that the warrant stock of Cleveland iron is still small compared with a warrant stock of 1,250,000 tons of Scotch iron, which existed in the 80's, but Glasgow is not the center of the world's iron trade now as it was then. On the other hand, it is to be remembered that we now see practically all the stock there is. In former days the makers, both in Scotland and in Cleveland, held large stocks besides what was in store. At present the Cleveland makers hold none beyond the day to day accumulations for delivery, and at the end of 1905 the Scotch makers held only 76,342 tons. Practically, then, the warrant stores hold all the reserve iron there is. And at the end of 1905 our total reserves amounted only to 880,240 tons of all kinds. This is but a trifle compared with what we have been accustomed to hold, but the serious feature is the large amount of ordinary foundry iron included in the total. The entire stock in the Middlesbrough warrant store December 31 was 710,738 tons, but that included No. 4 and hematite as well as No. 3 warrant iron.

The shipments of Scotch iron to the United States in

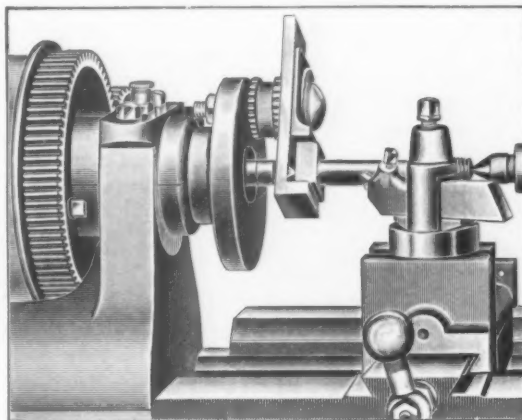
1905 were only 10,900 tons. From Middlesbrough we shipped 52,746 tons (spiegeleisen and hematite), as against 3150 tons in 1904. This was the increase that so excited the market recently.

In all branches of iron and steel there is a continuance of the activity which marked the second half of last year. In shipbuilding especially it looks as if we were going to make a new record this year. If we cannot compare with the United States in iron smelting we certainly can in shipbuilding, since the product of the Clyde yards alone exceeds by about 150,000 tons the whole product of the shipyards of the United States. The Clyde also considerably exceeds Germany. So active is our shipbuilding industry that extension and re-equipment of yards are the order of the day. Two new yards have been started on the most up to date methods (in place of old yards abandoned) by William Beardmore & Co. and Napier & Miller. We start the year with 600,000 tons of new work on hand and with every prospect of beating all records. This means of course plenty of work for local iron and steel manufacturers for some time to come.

B. T.

The Armstrong Bolt Driver.

The lathe attachment herewith illustrated and manufactured by the Armstrong Brothers Tool Company, Chicago, is intended for holding the heads of bolts or flat, square or hexagon stock while being turned. The parts are drop forgings of bar steel. As shown the driver is bolted to the face plate of the lathe, being offset from it



A Lathe Attachment for Turning Bolts, Made by the Armstrong Brothers Tool Company, Chicago.

by an extension bolt, the length of which is adjustable to alter the distance from the face plate to the body of the driver, according to the length of the center used. When in use the lathe center projects through a slot in the plate carrying the lower clamping flange and enters the center hole in the work. The jaws are adjustable and are set with the clamping of the single bolt that holds the device to the face plate. The piece to be turned is not gripped by the driver, but merely held against turning with respect to it.

The Government to Furnish Standardized Cast Iron Drillings.—Secretary Richard Moldenke of the American Foundrymen's Association announces the taking over by the Government of the Standardizing Bureau which the association has maintained for a number of years. Hereafter the standardized drillings of cast iron that have been prepared and sold by the American Foundrymen's Association are to be obtained from the Bureau of Standards of the Department of Commerce and Labor. Secretary Moldenke recalls the fact that to the association's president, Thomas D. West, belongs the credit of first calling attention to the advantage such a series of cast iron borings, standardized by the best known chemists of the country, would bring to iron laboratories. The standards of the association have been accepted everywhere as arbiters in cases of dispute. A broadening of the work of the bureau so as to provide standard drillings for check determinations in other iron and steel lines is expected, now that the work is under Government auspices.

Power Required to Thread, Twist and Split Wrought Iron and Mild Steel Pipe.*

BY T. N. THOMSON.

Some time ago my attention was called by the National Tube Company to steps that it is taking along the line of inducing manufacturers of dies to make certain improvements in the form of the dies that will enable the fitters to cut better threads with a smaller expenditure of energy than obtains at present with the ordinary forms of dies. I have investigated the matter a little from an educational standpoint on behalf of the International Correspondence Schools of Scranton, with a view to imparting reliable instruction to our students, many of whom are located in out of the way places, and even in foreign lands.

There are two kinds of steel pipe and two kinds of wrought iron pipe on the market—namely, good wrought iron and poor wrought iron, good steel and poor steel—and you cannot ordinarily distinguish between them till after the goods are bought and the men are cutting and threading them on the job. Some will split, some will chip as if made of crystal, in some the threads will strip, while others may even break across like glass bars. At the same time the trade must have very good uniform dies, and very good uniform pipe. If they cannot both be obtained at once, then let us get one at a time.

Tests of Pipe Rings.

I made a tour of some of the largest pipe mills in America. I carefully followed the process of making the wrought iron pipe from the puddling furnaces and the steel pipe from the blast furnaces, all through the mills, to the shipping department. The rolling, welding,

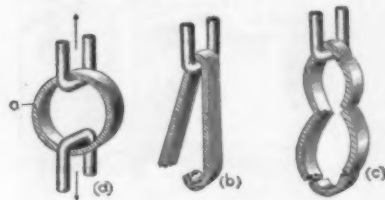


Fig. 1.—Tests of Pipe Rings.

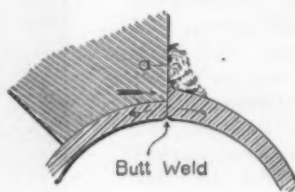


Fig. 2.—Action of Ordinary Die.

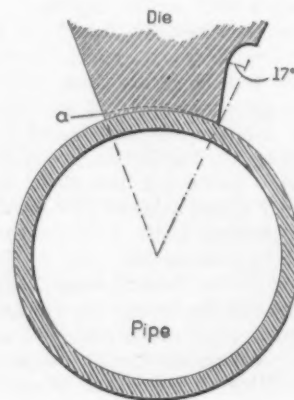


Fig. 3.—Die Made with a Rake.

straightening, threading, testing and shipping processes are exactly the same for wrought iron as for steel pipe, the only difference being in the composition and properties of the two metals. To all external appearance they are the same. I had a number of ring tests made to show the peculiarities of the two metals and the relative strength of wrought iron and steel pipe. It was a noticeable fact that the wrought iron rings broke very easily under the straightening out process by which a combination of tensile and cross strains are developed.

Fig. 1 shows at *a* how the test was applied. A ring of pipe about 1 inch to 1½ inches wide is secured by two hooks in a testing machine. The machine is set in operation and the hooks are pulled apart until the ring breaks, the pull applied to the ring by the machine being indicated by an electric measuring device. The rings tested were cut from lap welded pipe; the welds in the tests were placed as at *a*, Fig. 1, so as to test out the weld with relation to the strength of the other parts of the pipe. The illustration shows at *b* how the mild steel rings generally broke and at *c* how the wrought iron rings frequently broke. The tests developed the fact that some of the welds were stronger than the pipe, while others were weaker than the pipe. The strength of the weld depends a great deal upon the amount of the lap; those that did break at the weld were apparently short laps.

Table No. 1 shows the result of some tests I had made on eight rings of 6-inch pipe, four being wrought

iron and four being mild steel. I made these principally to observe the ductility of the metals in pipe form and the fractures, but the results are nevertheless interesting.

TABLE 1.—RING TEST—LAP WELD PIPE.

Wrought iron.	Mild steel.
Actual breaking strength.	Actual breaking strength.
4,100 pounds.	5,300 pounds, defective weld.
3,100 pounds.	35,000 pounds,
3,000 pounds.	29,000 pounds,
2,400 pounds.	18,000 pounds, hooks slipped.

Tests were also made by the National Tube Company which showed the tensile strength of the metal, the tensile strength of the seam and the relative strength of the seams as compared with their respective pipes. Perhaps the most important feature of these tests, as far as we are concerned at the present moment, is the fact that the ratio of strength between seam and pipe varies considerably. The strongest iron seam is 84.26 per cent. the strength of the pipe; the weakest iron seam is 49.07 per cent. the strength of the pipe. The strongest steel seam is 92.96 per cent. the strength of the pipe, and the weakest steel seam is 50.30 per cent. the strength of the pipe. No doubt these were samples of good pipe. The results, therefore, serve to emphasize the fact that neither wrought iron pipe nor steel pipe is uniform throughout in character and strength. It particularly shows how some pipes will split more easily than others while being worked.

The plumbing and heating trades experience a great

deal of trouble with pipe; the seams frequently become split while the pipes are being threaded, and considerable loss of time and money is occasioned all around. The reason why the seams become split is because they are not as strong as the rest of the pipe. If they were as strong as the pipe, then it would appear that the pipe would either twist or tear when an excessive force tends to open the seams.

Thread Cutting Dies.

Most of the splits in the trade are produced, I believe, in threading butt welded pipes. The lap welded pipes evidently do not split so frequently. The teeth of the dies in cutting the thread at the butt weld seem to catch squarely against the weld, as shown in Fig. 2, which exaggerates the thickness of the pipe, but clearly shows by arrows the direction of the principal forces that tend to split the pipe at the seam. The cutting face *a* of the die is radial—that is, it points toward the center of the pipe. The cutting edge, therefore, is a right angle. This kind of die, I understand, is to-day used more or less by nearly every firm in the heating business. I call this an imperfect design, because it does not have an acute angle cutting edge like any other cutting tool.

All tool manufacturers know that there is a certain angle or rake that is best adapted for cutting different metals in the most easy and most perfect manner, but it seems that the die makers are very slow in methodically introducing this principle into the die business. Fig. 3 shows at *a* the tearing out process of metal cutting by the imperfect dies in common use, and at *b* the correct principle of cutting metal as it is recognized by expert

* Abridged from paper read before the American Society of Heating and Ventilating Engineers, New York, January 18.

metal workers. Suppose a a' to be plates of mild steel such as is commonly used in pipe manufacture, then according to tests that have been made, the power required to pull the cutter b is about 60 per cent. more than that required to pull the cutter b' ; and if a relief is made on cutter b' , as shown by dotted line c' , the difference will be more near 100 per cent. If the plates were made of wrought iron, the power required to pull b would be approximately 45 per cent. more than would be required to pull b' . The ratio of the powers, of course, will vary with the composition and physical properties of the metals, but for ordinary wrought iron and mild steel, as they are found in pipe form, the aforesaid ratios, I believe, are approximately correct.

A large number of experiments on different forms of dies, the cutting rake, &c., go to show that the best angle of rake for dies that are to be used only on wrought iron pipes is about 12 degrees; the best angle of rake for dies to thread only mild steel pipes is about 20 degrees, and the best angle for a die that is suitable for both wrought iron and mild steel pipes is about 17 degrees, as shown in Fig. 3, and it can be greatly improved by having the die cut with a relief, as shown by dotted line a , so that the die will bear on the pipe only at the cutting edge.

Fig. 4 shows how the power was measured for thread-

fact of the matter is that all the pipes should be tested at the mills and all imperfect pipes should be cut up and sent to the scrap pile. A number of the large mills test all the pipe that is shipped, every pipe threading machine being equipped with a corresponding measuring and testing machine and a trained crew, but I do not know whether all pipe mills are thus equipped.

Twisting as a Test for Pipe.

To depend on the threading process for testing pipe seams is, in my estimation, absolute foolishness, for a large amount of pipe is fitted up in every job that never is subjected to the twisting strain produced by threading. For example, a number of full lengths constitute part of the mains; they are threaded in machines at the pipe mills by properly made dies. The risers are constituted principally of pipes that have a short piece cut off one end and the end threaded. The only piece that has been subject to twist is the short part that came between the vise and the die. The remainder of the length has had no twist except a little at the other end that may be applied by the Stillson in screwing up the pipe.

Of course it is advisable to take all precautions to prevent poor pipe from getting into a heating or power system, but it seems to me that better results will be

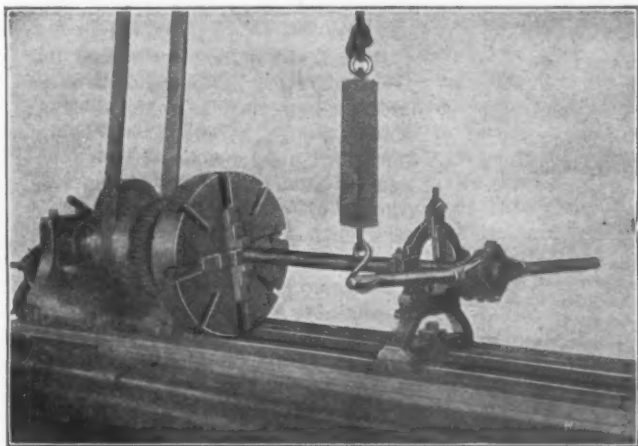


Fig. 4.—Rigged for Threading Pipe.

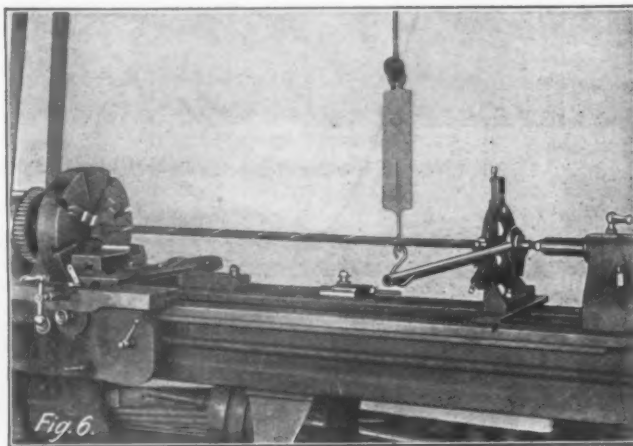


Fig. 5.—Rigged for Twisting Pipe.

MACHINES FOR MEASURING POWER TO THREAD AND TWIST PIPE.

ing both wrought iron and mild steel pipe with both the square edge die and the improved die. A test made on this machine with two samples of good pipe gave the results shown in Table 2. The dies were both in good condition; it is from this trial that the preceding ratios are determined:

TABLE II.—TESTS OF DIES.

Kind of pipe.	Old form of die.	New form of die.
	Pull in pounds on a 21-inch lever.	Pull in pounds on a 21-inch lever.
1 1/4-inch wrought iron.	83 to 87 pounds pull.	58 to 62 pounds.
1 1/4-inch mild steel.	100 to 111 pounds pull.	60 to 65 pounds.

The samples used in the above test were ordinary good quality pipe picked out at random. It shows that the power required to thread mild steel pipe with the new die is not much more than that required to thread wrought iron pipe with the same die, and much less than the power required to thread wrought iron pipe with the common die.

This is an improvement in dies that makes the threading operation very easy on the men. If men are to be expected to do good work and keep it up all needless expenditure of energy should be eliminated. I do not see the use of a fitter pulling 100 pounds on a stock arm if a pull of 60 pounds can be made to accomplish the same purpose. An objection may be raised to the effect that if a pipe is so poor that it will split while being threaded it has no right to be installed as part of a heating or power system. This objection is strictly correct, but it is no reason why we should depend on testing pipes for splitting proclivities by cutting threads on them. The

obtained by an intelligent inspection of the seams and by a series of torsion tests that will actually test the strength of the welds the full length of the pipes. Of course the right place to have pipes tested is the place where they are made. It therefore seems to me that torsion tests should be applied at the mills. Probably the present hydraulic testing machines can be slightly changed so that each pipe while being tested with water pressure will in the same operation be subjected to a certain amount of twist that will immediately prove whether the pipe is water tight and whether it will split in being handled by the trade.

To secure some definite information regarding the power required to split or twist pipe a number of torsion tests were very kindly made by the National Tube Company. The sizes twisted were 1/2, 3/4 and 1 inch. The pipes were selected at random. I purchased a lot of common merchant pipe on the open market by cutting a piece out of a length in different bundles. No two pieces were taken from the same length nor from the same bundle. In this way I believe we obtained a fair average. Each sample to be twisted was 6 feet long. Fig. 5 shows the machine used to make the test. One end of the pipe was secured to the chuck of a lathe, the other was secured to a clamp having a 3-foot lever, which was held up by a spring balance as shown. The machine was put in motion and the power required to twist the pipes or split them was recorded on the spring balance and noted. Each piece of pipe was subject to precisely the same conditions. The results of the tests were tabulated

in detail and are altogether too voluminous to be incorporated in this paper.

TABLE III.—TWISTING TESTS ON BUTT WELDED PIPE.

Inch.	Material.	Weight per foot. Pounds.	Maximum pull on 3-foot lever pounds.			No. of turns in failed 6 feet. in weld.	Per ct.
			Low.	High.	Aver.		
½.....	Steel.	0.816	90	120	109	15	0
	Iron.	0.803	40	98	68½	4½	73
	Iron.	0.792	20	113	81	5½	66
	Iron.	0.842	50	85	65	2½	100
¾.....	Steel.	1.082	160	185	172	8	13
	Iron.	1.097	140	160	154	6.2	33
	Iron.	1.127	80	176	136	3½	66
	Iron.	1.104	50	160	107	2½	90
1.....	Steel.	1.658	180	340	300	5½	13
	Iron.	1.593	220	292	256	4½	46
	Iron.	1.616	170	300	250	3½	33
	Iron.	1.620	100	320	258	2½	66

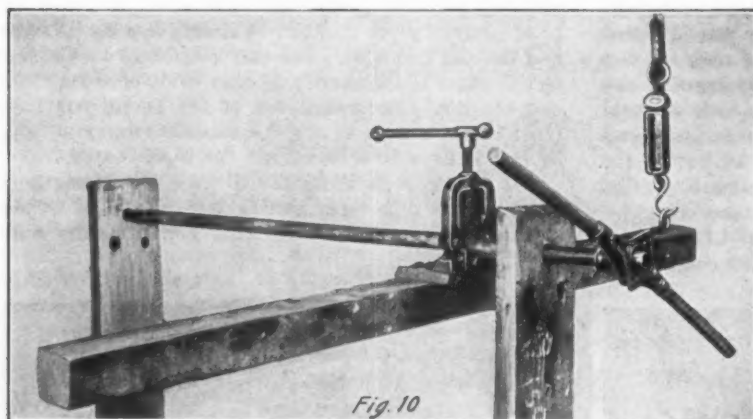


Fig. 7.—Apparatus for Measuring Power for Pipe Threading by Hand.

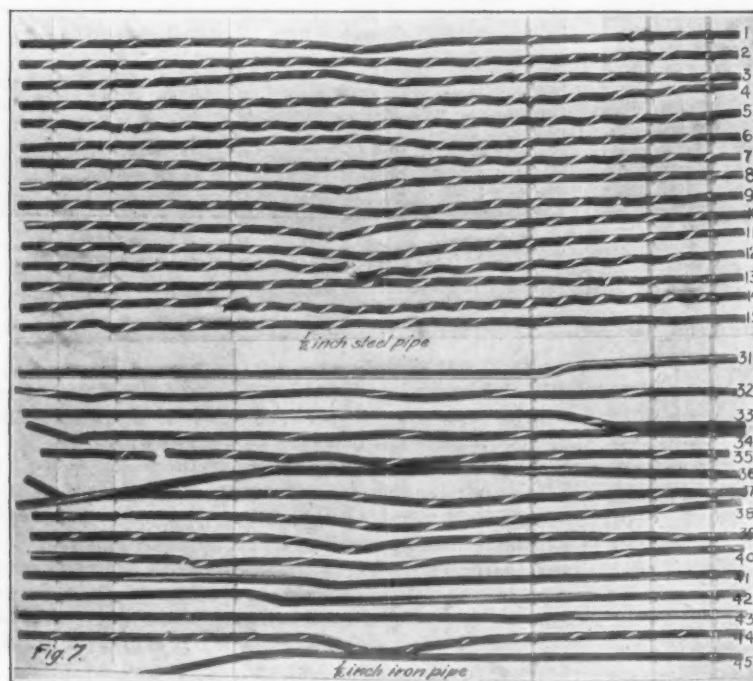


Fig. 6.—View of the Pipes After Having Been Twisted.

Table No. 3 is simply a summary of a large number of detail tables. In making up the latter tables the record of every piece of pipe is noted separately. As the photos of the twisted pipes are too numerous to be all presented in this paper, I have selected the steel samples and the middle iron samples of each size. It would not be fair to put up the last line of samples of iron pipe against the steel photos, because this iron pipe was very poorly welded, as can be seen by Table 3, and a false impression of wrought iron pipe may be formed.

Power for Threading Measured by Hand.

The tests of the National Tube Company I am satisfied are very thorough and are exceedingly valuable records,

but as they were all made on machines, and as ½, ¾ and 1 inch pipes are threaded by hand in pipe vises, I made a number of tests at the laboratory of the International Correspondence Schools with a view of obtaining as nearly as possible the strains that are actually placed on pipes in practice. We secured a number of samples from different supply houses and from the pipe racks in the plumbers' and fitters' shops in Scranton, the idea being to test the regular nondescript merchant pipe in common use and find how much power is actually required to thread and split this class of pipe by the mechanics on the jobs. To make the threads we borrowed the tools from the trade, so that there also we would get actual practical results. In making the tests we used a pipe vise and Stillson

wrenches, so that the action of their teeth and the shifting of grips would all form a part of the tests. Of course it must be expected that tests made this way will develop entirely different results from tests made in machines with properly designed clamps and a steady application of the power. While the International Correspondence Schools tests give an idea of what takes place at the pipe vise with hand tools, the National Tube Company tests show what may be expected at the threading machine.

Fig. 7 shows how we rigged up the apparatus. Two rigid 2 x 8 inch uprights each have three holes bored through, as shown, one being for 1-inch pipe, one for ¾-inch pipe and the other for ½-inch pipe. The pipe in all cases was grasped by a vise which was bolted to the center of a 4 x 4 inch timber. The pipe was lubricated where it passed through the uprights. As the arms of the stocks were 18 inches long from the center of the die to the extreme end, and as the actual distance of the center of a man's hand will be about 2 inches from the end of the stock arm, we attached an eye bolt to the 4 x 4 inch timber so that the hook of the spring balance would be 16 inches from the center of the pipe in the vise. In this way we can read on the spring balance the amount of pull a fitter has to apply to the dies. For convenience the power required to twist and split is also given with the balance at a 16-inch lever.

The difference between the threading operation, which is shown in Fig. 7, and the twisting operation is that in the latter the dies were removed, Stillson wrenches were applied to the other end of the pipe, where it passes through the upright, and the pipe was twisted by these wrenches. Of course the wrenches chewed into the pipe and so did the vise, but this is a true condition of the trade and it is well for us to know what happens under such conditions. The records were all taken during steady pulling. When the dies were pulled quickly in jerks or run dry the power increased anywhere from 30 to 50 per cent. The old common form of dies referred to was in very fair condition, the 1-inch die being particularly good. It did not cut down to gauge, and its record consequently is rather low. A summary of the results of the tests is given in Table IV.

In making the torsion tests, we had to screw up the vise tightly to prevent the pipe turning and this tended to crush the pipe and start the seam. Most of the splits started at the vise. Galvanized pipes were more difficult to hold than black pipes.

TABLE IV.—APPROXIMATE POWER REQUIRED (POUNDS) TO THREAD, TWIST AND SPLIT PIPE.—SUMMARY.

Kind of pipe.	To thread; well oiled; steady pull at 16-inch leverage on die stock arm.		To twist. To split. Steady pull with Marginal pull pull with Still- son's son's safety.			
	New rake dies.	New common dies.	Old common dies.	pull with Still- son's.	pull with son's.	of safety.
Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
1/2-inch steel. (4 samples) . .	34.5	56.25	60.5	122.5	152.5	73.85
1/2-inch iron. (7 samples) . .	27.14	33.14	49.14	102.14	110	46.12
3/4-inch steel. (4 samples) . .	44.25	60.5	90.75	150	240	122.05
3/4-inch iron. (8 samples) . .	44.375	51.25	73.5	140	176.43	80.88
1-inch steel. (5 samples) . .	68.8	111	124	286	420	258.8
1-inch iron. (7 samples) . .	62.14	105.7	118.57	272.85	326.66	172.52

The margin of safety column at the right hand side of Table 4 is compiled by adding 30 per cent. to the power required to thread with old dies and subtracting the sum from the power required to split the pipe. If the mechanic pulls on the dies beyond that limit, due to dull and imperfect dies, or due to a hard spot in the pipe, he certainly will, according to the nature of things, split the pipe. Or, if the power required to split is nearly the same as the power required to thread, as is the case in the last sample of 3/4-inch pipe in the mild steel list (which, on test, proved to be 3/4-inch galvanized iron), then the pipe will certainly split through no fault of the mechanic, but through defective tools combined with a quick, jerky motion which the men must put on the dies if they are going to hustle along the work. With dies having the proper rake there would be no danger of splitting this pipe while threading it.

It is noticeable that the margin of safety for the steel pipe is much greater than for the wrought iron pipe, and it seems rational to assume that the trade must experience trouble by wrought iron pipe splitting at the vise as well as steel pipe. Judging by the tests, it is evident that common steel merchant pipe will ordinarily twist before it splits and that common wrought iron merchant pipe will sometimes do the same thing, but the iron will not twist as much as the steel and requires on an average less power both to split and twist. However, in wrought iron this weakness is somewhat compensated for by the smaller amount of power required to thread.

My opinion of the entire case, independent of all outside influences, is that correctly made dies are a step in the right direction, and that die makers should make all their dies with a rake that is best adapted for threading both wrought iron and mild steel pipes, and with sufficient relief to reduce friction. I would suggest for your consideration the preparation of a standard torsional test that any intelligent mechanic can easily and quickly apply on a job to any length of butt-welded pipe, with the object of determining whether or not the weld is sufficiently strong to warrant its use in a building.

British Steel Cars for South America.—London *Engineering* refers to a trial order placed by the Buenos Ayres & Pacific Railway for a number of steel cars, after patents of the Sheffield-Twinberrow Steel Car Company, Newcastle-on-Tyne, and to be built by the British Electrical Engineering Company, Limited, Loughborough. There are two types: one consisting of a number of high sided freight cars of 40 tons capacity, with four sets of side doors and level floors. The length over buffers is 37 feet; height from rail level, 8 feet 6 inches; and over all width, 9 feet 8 inches. The tare weight is 13 3/4 tons. The other type consists of a number of covered cars, each of from 42 to 45 tons capacity, for the carriage of grain in bulk. These cars, with an internal capacity of nearly 5000 cubic feet, are 13 feet 6 inches in height from rail level, 37 feet over buffers and 10 feet wide over all. The tare weight is 13 3/4 tons. The roof of each car is provided with three large manholes for feeding in the grain and the sides of the cars are supplied with sliding doors 5 feet wide, through which mechanical diggers

extract the grain. Train loads on the Buenos Ayres & Pacific Railway exceed 2000 tons.

Lake Superior Mining Notes.

DULUTH, MINN., January 20, 1906.—The Rand Drill Company's Duluth office, in conjunction with the Canadian Rand Drill Company, has sold the Atikokan Iron Company a full plant of mine machinery and equipment, which is to be set up and put in running order within six months. The plant includes no hoisting plant, for the company will be able to mine in tunnels and open cuts for a long time. There is to be one Blake crusher, of 1000 tons capacity in 24 hours, calculated to crush to 2.5 inch size, together with steam power. There will also be a 20 x 30 compressor, half of which is to be installed at once, and ten drills. The Canadian Rand Drill Company has granted J. G. Harris six months' leave of absence, during which time he will install this and other machinery for the Atikokan Company and get it to running to capacity. The company's furnace will be ready for blowing in late in the year and will have capacity for about 100 tons. It is proposed, as has been stated in *The Iron Age*, to mine for the Canadian market and to crush and roast the ore before shipping from the lake port.

Efforts are now making to secure from the Canadian Government a bounty of \$3 a ton for pig iron made in Canada, in place of the annually diminishing bounty now in force and also to secure a bounty on ore mined there. The indications are that both these propositions may be acceptable to the Government in some modified form.

The Zeno Iron Company, Duluth, which is an adjunct of the Zenith Furnace Company of the same city, is negotiating the purchase of a large part of the Crosby holdings on the new Deerwood or Cuyuna district and if it closes it will explore thoroughly. The ore found there so far has not been of merchantable quality, but the company hopes to find some in the course of its work. Other explorers on the same range are meeting with about the same character of ore that has been found in greater or less quantity for the past year or more, amply sufficient to keep the operators on the anxious seat and induce them to continue work.

It seems that the total shipments of iron ore for the year just passed by the new car ferry route of the Wisconsin & Michigan Railroad amounted to 20,169 tons. This was all from No. 5 shaft of the Aragon mine. The understanding was that shipments of this road had been about 100,000 tons for the season. This ore was shipped from Norway to Peshtigo, thence on car ferries to Chicago, where the cars were transferred to railroad tracks and the ore went to the Joliet furnaces of the Illinois Steel Company. This shipment is surprisingly small, and does not indicate any very urgent demand for the new manner of forwarding ores. The company expects to materially increase its business during 1906.

The lands of the original Mesaba Company, the Mesaba Iron Company, have been leased to G. A. St. Clair, Duluth, who has been quite successful of late in explorations on the eastern part of the range. He will take up the development of this company's lands in T 60 R 12 at once, and will take drills in during the cold weather. The general impression is that these lands do not lie on the valuable portion of the range, but if good ore can be shown there it is of the utmost importance to the entire lake region.

At the Kimball exploration, Menominee range, unwatering is progressing favorably, and the property will soon be in position for thorough development underground. These preparations have been under way for some months. Near by the Dunn will have a new and larger plant of machinery in place soon. These two mines are the property of Corrigan, McKinney & Co. At the Armenia formation the Buffalo & Susquehanna Company has begun drilling for extensions of the ore body found on the main Armenia. At the new Fairbanks mine ore is coming to surface and the openings are looking well. There is much exploration around Crystal Falls, where all these properties are, and the future of the section is bright.

D. E. W.

again, when the old claim would be just as collectible as it ever was.

The fact is that to-day the bankruptcy act favors the bankrupt rather than his creditor. No one doubts, however, that the best interests of the community are served by relieving the honest bankrupt of his debts. If the law goes amiss at times and gives the dishonest debtor the means of escaping from his creditors, it is only because he is willing to put himself in jeopardy of criminal prosecution for perjury, and every law—and this was true of the insolvency laws—is liable to miscarry where the criminal tendency exists among those with whom the statute has to deal. It is very difficult to find a man doing an interstate business who would willingly see the old status replace the bankruptcy law. There is probably no danger if those interested are alert in putting their opinions before their representatives at Washington.

The Heavy Tonnage of Steel for Cars.

Out of a total of 340,000 freight cars ordered by the railroads of the country in 1905, figures just compiled show that 161,000 were specified to be of steel or with steel under frames and that 179,000 were to be built of wood. The figures strongly reinforce what has been demonstrated in service tests, that for cars of 80,000 pounds' capacity or more, under the severe conditions of modern service, the steel car has decided advantages in efficiency and economy. Of all the freight cars built in 1905 it is estimated that nearly 75,000, or about 45 per cent., were turned out by the eight plants in the United States that are equipped for building steel car bodies and steel under frames. It is expected that the capacity of steel car works, which was 225 cars a day for a considerable portion of 1905, will be over 300 cars a day in the near future, and that from 90,000 to 100,000 steel cars or steel under frame cars will be turned out in 1906, there being sufficient orders now on the books of the works to insure full operation to the end of the year.

From competent authority we have the estimate that between 1,300,000 and 1,400,000 tons of rolled and forged steel will be required for the steel car works output of 1906, and when to shapes and axles are added the requirements in foundry products—malleables, steel castings and car wheels—it may be reckoned that 1,800,000 to 1,900,000 tons of iron and steel will be consumed by this single industry in the present year, a source of demand that was scarcely regarded as a factor seven years ago.

For the four years preceding 1905 the total number of steel cars ordered, as given by the *Railway Age*, was 138,000, or an average of 34,500 a year. This it will be seen is but little more than 20 per cent. of the number of steel cars ordered last year and indicates a remarkable development, one that has no parallel in the growth of industries dependent for their raw material on the product of the rolling mill and foundry. By the end of 1906 it is probable that more than 2,000,000 freight cars will be in use on the railroads of the United States and that 350,000 of these will be of steel or steel under frame cars. What is of special significance to the iron trade is the large field that yet remains to be occupied by steel cars, both through the steady increase in railroad mileage and in the gradual replacement of wooden cars by steel cars, passenger as well as freight. Already rapidly approaching the wire and wire nail industries in its requirements of iron and steel, the steel car industry is pushing forward at a rate that one day may bring its tonnage abreast of that entering into steel rails.

Remarkable Showing in Foreign Trade.

Regard for the excesses that grow out of prosperous times occasionally brings out the remark that the only unfavorable feature of present conditions in the United States is in the fact that they are so exceedingly good. One factor that can hardly be measured but that is accountable for much of the improvement noted in the past two months over the traffic records and production records of a year ago is the mildness of the winter. Some interests have suffered, the coal trade among them, and the retail trade in certain seasonable goods. But the uninterrupted operation of the railroads, due to the absence of snow, is doubtless responsible in part for the large exports of grain in the past two months and the heavy balance of trade in favor of this country that appears in the December returns.

The figures of the Bureau of Statistics of the Treasury Department show that the merchandise exports from the United States in December rose to the unprecedented total of \$199,709,068 and exceeded imports for that month by \$98,553,705, which was also a new high monthly total. For the year 1905 the excess of exports over imports was \$447,603,497; and in the eight years 1898-1905 inclusive, by far the most remarkable stretch of prosperity the country has known, the excess of exports over imports was more than \$4,000,000,000. It can be well understood in the face of such figures why it has been possible for this country to buy so large a proportion of the American securities formerly held in Europe and at the same time to become so considerable a purchaser of foreign bonds. Measured by such statements the growth in the wealth of the United States is one of the modern marvels.

One Lesson of the Automobile Shows.

The automobile shows are demonstrating that the builders of motor vehicles must add heavily to their equipment if they are to take full advantage of the demand for their product. It is already evident that last year's experience will be repeated in that there will not be enough machines to supply the trade, and this in spite of the fact that the output of the shops has been greatly increased during the past 12 months. It is probable that the works will be rushed throughout the season, first in building this season's machines and afterward in turning out the 1907 model, which is likely to be available in the autumn. It is still evident that the popularity of the automobile is increasing, which must influence builders to expand with even greater rapidity, and what is true of the car business also applies to the accessory trade, which extends into nearly every manufacturing industry in the metal lines. An increased demand for machinery and raw materials is promised from customers who have been playing an important part in the market for several years.

The freight department of the Pennsylvania Railroad Company has published a pamphlet of 105 pages, 8 x 10 $\frac{3}{4}$ inches, entitled "Available Property and Building Sites Suitable for Industries on Lines of the Pennsylvania Railroad Company." Descriptions are given of particular pieces of property in several hundred cities which can be secured for manufacturing purposes. A much thicker volume, containing in addition to its 466 pages a map of the Pennsylvania Lines east of Pittsburgh gives information as to the population, wage rate, principal industries, schools, government, tax rate, cost of rent, fuel and water supply, and other details of cities and towns reached by these lines—all designed to inform manufacturers who are in search of favorable locations.

CORRESPONDENCE.

Electro-Galvanizing.

To the Editor: My attention has just been drawn to some articles which have recently appeared in several trade publications regarding certain familiar methods of galvanizing. The claim is made in these articles that the coating of zinc, as applied by the electro process, has been found by certain scientific men to be equal, if not superior, in wearing qualities to that obtained by the hot process.

In this connection let me say that several years ago I made some simple experiments on my own account. The result showed me conclusively how much these so-called wearing qualities of the electro process are worth when tried in actual practice, and it has occurred to me that an account of the experiments may be of interest to some of your readers.

Several years ago certain parties who were interested in promoting the electro process made a strong effort to induce our firm to install one of their plants. They claimed for their process the merit of economy, pure metal, extra smooth finish, &c., and they pointed out in particular that it could be successfully applied in galvanizing some of the smaller articles of our manufacture. At that time I confess that I was quite favorably impressed with the electro method, as the light, even coating of zinc which might be obtained seemed to me superior for some purposes to the heavier coating which is applied by the hot process. However, before deciding to adopt the electro method of treating our product it was deemed advisable to have a more practical and definite assurance of the durability of the coating than the mere word of the promoters. With this object in view therefore I decided to expose samples of both hot and electrogalvanized pieces to the action of the elements and let time rather than any chemical test decide as to the superiority of the two coatings.

I had previously obtained sample pieces from the parties who were desirous of installing an electrogalvanizing plant at our works. The pieces had been treated by them and the zinc coating on them was guaranteed to be as durable as that of the hot galvanizing. These pieces, together with others similar in shape and size which had been hot galvanized, were suspended outside my office window. My intention was to note the effect of a short time exposure only, but in point of fact the samples were allowed to remain in the same place for a trifle over three years. After six months' exposure the electrogalvanized specimens began to show signs of rust in the corners and lower parts of the castings. The rust spots gradually increased in size until at the expiration of the three years during which they had been exposed the zinc coating was almost entirely removed and the pieces were heavily coated with rust. The hot galvanized samples, however, which had been exposed to identically the same influences, showed no signs of rust at the end of the three years' exposure and were found to be in exactly as good condition as when first galvanized. This demonstration of the lack of wearing qualities was so convincing that the idea of possibly adopting the electro process at our works was completely abandoned. On several other occasions since the commencement of these tests I have exposed various samples of both hot and cold galvanizing and have invariably found the results exactly as recounted above.

Furthermore, as to the durability of the zinc coating as applied by the hot process, I have recently examined some galvanized shingle nails that were taken from the roof of a building which adjoins our factory. The shingles were badly decayed, as they had been in use for 21 years. The nails were found to be, however, in practically the same condition as when first used. The coat of galvanizing was not removed, but, on the other hand, even after 21 years' exposure to atmospheric conditions, including the severity of our New England winter's cold and extreme summer's heat, the nails as originally galvanized were still free from rust and fit for further use.

While some scientific men may claim that theoretically the exceedingly thin coating of zinc as applied by the

electro process is equal, if not superior, in wearing qualities to the heavy coating which must necessarily be applied when the articles to be galvanized are dipped into the melted metal, the facts demonstrated by the above experiments prove to me beyond question that the two coatings should not even be classed together; the hot process triumphantly endures the searching test of time and actual service, whereas the other process does not.

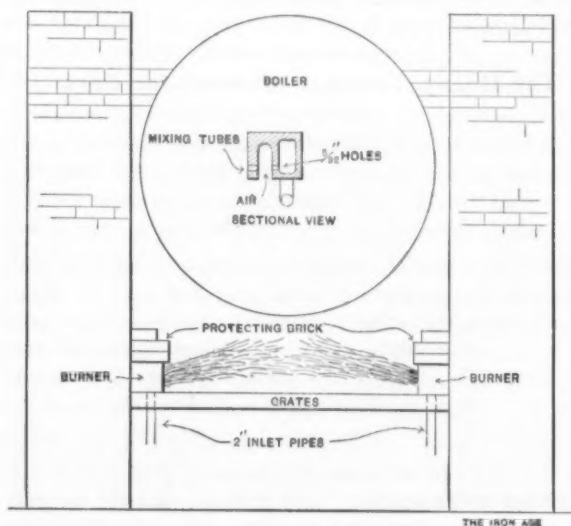
EDWARD S. MOWRY,

Superintendent of Galvanizing Department, Wilcox, Crittenden & Co.

MIDDLETOWN, CONN., January 20, 1906.

Gas Fired Steam Boilers.

To the Editor: In answer to your request for information on gas burners for boilers, in the January 4 issue, I inclose this sketch of a furnace equipped with a good gas burner, which can be used with coal or other fuel. I



Natural Gas Burners Used in Conjunction with Coal Grates.

have used such burners in that way for years. The burner is known as the Klein natural gas fuel burner and is sold by Tate, Jones & Co., Incorporated, Pittsburgh, Pa. The burner lies against the side wall of the furnace and is long enough to be supported by the grate supporting bars or brick work. The 2-inch gas inlet pipe may be brought in at the side of the ash pit door or through holes in the front or side, as most convenient. A cross section of the burner is shown in the detail at the center of the sketch.

J. O. BENEFIELD.

ANDERSON, IND., January 12, 1906.

The Oliver Iron Mining Company's Management.

DULUTH, January 20, 1906.—The retirement of L. W. Powell, assistant general manager of the Oliver Iron Mining Company, makes necessary several changes in the management of that great organization, the largest mining company in the world. Following its general policy these changes are likely to be altogether in the way of promotion of men already in the employment of the company and in line for its most responsible places. At the time Mr. Powell resigned to accept the management of copper interests in the Southwest, he had been appointed general manager and was to have taken this place in a few days. W. J. Olcott, who had been general manager and vice-president, was to become vice-president, with the duties that had formerly devolved upon him.

It is understood that appointments to fill out the company's roster of officers will be announced by T. F. Cole, its president, in a few days. Mr. Powell's place will be filled by a general manager and an assistant general manager, and Pentecost Mitchell and John H. McLean are supposed to be slated for the position. Mr. Mitchell, since the organization of the United States Steel Corporation, has been the Oliver Company's manager for the

Hibbing district, where the company last year mined more than 5,000,000 tons. Prior to the organization of the corporation he was superintendent of the Hibbing group of mines of the Rockefeller interest, under Mr. Olcott, who was then general manager for those interests. Mr. McLean has been manager of the Oliver Company's great group of mines on the Gogebic range since its organization, a group that last year produced about 2,000,000 tons, all from deep mines. Prior to the organization of the corporation he was in charge of these mines for the original Oliver Mining Company, succeeding Mr. Cole, who moved to the superintendency of all the company's mines. Before that time Mr. McLean was at the Pewabic, under Dr. N. P. Hulst. The probable removal of Messrs. Mitchell and McLean to Duluth will necessitate a general stepping up along the line at the Gogebic range mines and at Hibbing. Both these leading appointees are big and broad men, able and skillful and the duties that devolve upon them will be ably accomplished, without doubt.

D. E. W.

The Automobile Shows.

So great is the interest in automobiles that there is probably no single event during the year that draws more visitors to New York City than the annual automobile shows. Last week, while the Automobile Club of America and the Association of Licensed Automobile Manufacturers were holding their annual exhibitions in the 69th Regiment Armory and Madison Square Garden, respectively, the hotels were taxed nearly to their utmost capacity. The distinction between the two classes of automobile manufacturers is based on the fact that one, the licensed association, recognizes the validity of the basic Selden patent on the gasoline automobile and is paying a royalty for its use, while the other does not. It is likely that the dispute will be settled in a short time, as the case is pending in the courts; all of the evidence is in and it only remains for the decision of the courts following the summing up of the attorneys for the two sides. The attendance at both shows was enormous and the amount of business done by the exhibitors is said to have exceeded that of any previous year.

The present signs are so strong that it may hardly be called a prophecy to predict that the horse-drawn vehicle will before many years occupy about the same position with respect to the automobile that the sail boat bears to the steam vessel. An index to that fact is the number of newcomers that have taken up automobile manufacturing, and these almost without exception have established reputations in other lines and would not take the step without being thoroughly convinced of its wisdom. The commercial motor wagon reflects the same probability. It has been slower to develop, but is now gaining rapidly. During the experimental stage it was natural that the adage should be reversed and that "pleasure should come before business," but now that period has passed and delivery wagons, trucks and farming machinery are made that have a demonstrated measure of dependableness and can offer a real economy in the cost of operation.

Among the Present Tendencies in Automobile Construction

one fact stands supreme—that the main features have become established and are nearing uniformity. This does not argue that new things are not to be seen, but progress has now taken such form that radical departures from the common trend are scarce. A gratifying truth is that American designs may no longer be considered behind those of foreign builders in any regard, and if anything are mechanically superior. The point has been reached when the makers of this country, in spite of higher cost of labor, can compete with those abroad and even in their own countries, as indicated by the tide of export that has begun, although it is still insignificant compared with the imports. A good reason for this is that our factories are not yet able to satisfy the home market. When that time is reached there is

little doubt that the exporting will wax and the importing wane.

In point of numbers the adherents to the different sources of power—gasoline, electricity and steam, stand in the order as named. Gasoline cars are very strongly in the majority. They have a field by no means as limited as that of the electric machines, while steam automobiles, with one exception, have dropped out of use altogether. The builder of the Grout steam car has now abandoned it and brought out a gasoline car and the only one left is the White Steamer, which has a peculiar system of generation distinguishing it from any other steam car. The number of electric vehicles is larger than before and they show a decided improvement in details and general construction. Like the gasoline cars, there is a more settled standard practice and the tendency is to follow the example of the most improved gasoline machines by putting the motor near the front, and driving with shaft and bevel gears to the rear axle. One company showed a unique exhibit in the form of an electric tractor which replaces the front wheels of any ordinary horse-drawn vehicle, converting it into an electric automobile. The motors, battery boxes and steering mechanism are self-contained in the tractor.

Gasoline Automobiles.

In the gasoline cars, the rule is now general that the engine should be of vertical cylinder form and contained in the front hood. The two-cylinder motor is losing ground and four and even six cylinders are in most favor. There appears to have been a call for higher power in runabouts and many makers are catering to this demand. Several are shown with four-cylinder engines, although with one exception they are of higher price than the runabouts using two-cylinder vertical motors under the hoods or opposed horizontal motors beneath the seats. The car referred to, made by the Ford Motor Company, created somewhat of a sensation because, following the announcement of the low price at which it was to be offered, there were few that expected to find it of such high-class construction. Other makers are also realizing the possible business for medium priced machines, and the 1906 models, generally, offer the purchaser much more for his money than ever before.

The Motors.

There is still a division of opinion concerning water and air cooling of the cylinders. While those in favor of the first are still in the majority there have been converts both ways, but more to air cooling than vice versa, so that the latter is undoubtedly increasing in popularity. A strong argument for air cooling is a successful six-cylinder engine of that type offered by one builder. The three-cylinder engine, once so popular, has nearly passed out of the running, and the four-cylinder, though at present the most widely used, is likely to be superseded by the six-cylinder motor for high powered cars. This, however, is the evident limit of cylinder multiplication, as beyond it there is no advantage equal to the disadvantage of increased complication. The six-cylinder engine gives three impulses every revolution and affords all that can be wished for in smoothness of running. The cylinders are in general cast in pairs, though some contend that single units are best. A few makers attempt four cylinders in a single casting, but the loss of the whole engine if a single cylinder goes wrong and the greater difficulty of casting put the advisability of the practice in question.

The location of the valves, either all on one side, or the inlets and exhausts on opposite sides, seems to depend on the price of the machine. The second arrangement doubles the operating parts and is therefore more expensive. Many do not concede that the advantage is sufficient to offset the expense. The placing of one or both valves in the head is a third way adopted by some. Lubrication and ignition are greatly improved, but there are many points of difference still contested. Mechanical or forced lubrication is accomplished in three ways, by pumping, by pressure from the exhaust, or by crank case compression. All take precedence over the nearly discarded splash system.

Both make-and-break and jump spark ignition are still used, but the most used system is the jump spark, since the inherent defects which formerly characterized it have been almost entirely removed. The make-and-break magneto seems, however, to be gaining in favor. In high priced cars it is common to install both systems, the one as a reserve to the other, which very greatly reduces the possibility of becoming stalled on the road from a failure of the igniting apparatus. Another feature of the more expensive cars is the substitution of storage batteries for dry cells to furnish the igniting current, but the scheme has its drawbacks in the greater care required in handling storage cells and the annoyance of having them charged.

Power Transmission.

In transmission systems the sliding gear type is fast superseding the planetary type. That the latter still persists can only be explained by the improvements which have been introduced in the last two years, and which largely remove the objections formerly obtaining. As a rule the medium powered cars have three speeds ahead and a reverse, and those of higher power have four forward speeds. The shaft transmission with universal joints is plainly the favorite and few are still adhering to the chain drive. The controlling mechanism is very desirably becoming simplified and a commendable consideration for convenience and safety is everywhere apparent. Among the forms of clutches shown the cone clutch is most prominent, but the multiple disk and the expanding divided ring type are also in vogue. Of these the second is one that is likely to meet with increasing popularity. With all the aim is to secure positive, non-slipping devices which shall, however, be capable of engaging without too violent a shock, and an improvement in this direction has already been made.

General Design.

Frame and general body design exhibit some changes and are approaching an accepted and uniform standard. The tendency is toward longer and stronger frames, principally as a result of the use of heavier and more powerful engines. To keep down the weight aluminum is being used in such parts as crank cases, gear cases and other enclosing parts. The bodies of the open types of touring cars are now universally made with side entrances and the Victoria pattern appears to be the choice. Many more Limousine bodies are offered this year by American builders than ever before. Until this year the monopoly of this style was enjoyed by the foreign, and particularly the French makers. In general the tendency is evidently toward more careful and finished work.

Accessories.

The exhibits of accessories and parts were more extensive and better arranged and demonstrated than in previous years and consisted of greatly improved and standardized products. Their workmanship and finish have received more attention, and wherever possible they have been made applicable to any machine. The tires and tire accessories have developed quite remarkably and the special devices displayed for securing the tires to the rims and preventing their skidding on slippery roads have much in their favor. The large part of the accessory exhibits, which may be classed as comforts rather than necessities, reflect a desire to give the automobile a more ornate and artistic appearance than was ever attempted in horse-drawn vehicles at their best.

Rogers, Brown & Co., in their Buffalo review of the pig iron market, under date of January 18, 1906, say: "One of the most noteworthy features of the trade tributary to this market is the promise in the immediate future of very large increase of consumption among the specialty foundries. Several plants are increasing capacity from 50 to 100 per cent., while one or two entirely new and extraordinarily large enterprises will be in the field during the next two or three years. With the ship canal parallel to the Niagara River completed, together with the enlarged Erie Canal, it is reasonable to expect a further large increase in local consumption of pig iron within a few years."

The Cleveland Cliffs Iron Company.

DULUTH, MINN., January 20, 1906.—Considered as an entity, the Cleveland Cliffs Iron Company easily ranks second to the United States Steel Corporation in its Lake Superior iron activities. Not alone is the company a very large ore producer, but its associated industries are wide and of the most far-seeing nature. It is, too, like its big neighbor, managed with the utmost skill and along broad lines, with an eye not alone to its own aggrandizement, but also for the benefit of those in its employ and under its influence.

Shipments for the past year from the mines of the Cleveland Cliffs Company, compared with those of 1904, have been as follows:

Mines.	1905. Gross tons.	1904. Gross tons.
Ishpeming group	1,225,296	743,263
Ashland, Gogebic range	412,166	344,102
Negaunee	243,605	145,132
Jackson group	33,130	.....
Ogden	6,806	.....
Lucy	126	.....
Imperial	1,663	727
Austin	44,653	.....
Princeton, Swanzey	47,290	.....
Totals	2,014,735	1,233,224

The only decrease shown in the past year is at the Princeton, but the company did not take possession of this mine till August. Its shipments for the former owners amounted to 76,461 tons during 1904. This company owns only a half interest in the Negaunee, but handles the entire product, and it is all considered in the above table. It owns also 25 per cent. of the stock of the Regent group, at Negaunee, but this interest, amounting to 63,344 tons in 1905, is not included in its totals.

All the company's mines are being prepared for a larger output this year. Extensive betterments are under way at many, and the rest will work to their full capacity. At the Cliffs shaft, at Ishpeming, a large electric underground haulage plant is under way; at the Crosby, on the western Mesaba, a 200,000-yard contract for stripping has been let to the Roberts-Kingston Company, and an underground haulage plant is to be installed, so that the mine will have a large capacity in 1906. The Negaunee group, which the coming season will include the Maas, will increase very much, for the Maas will ship some and the Negaunee is now equipped for a good business. Smaller mines now under this company's control in the Marquette district will produce more heavily as their development proceeds. The Ashland will be a large and important shipper. Some additional Gogebic shippers may swing into line in due time. The company is carrying on very extensive explorations on that range and, if these succeed, will open at least two mines. Its explorations in the Cascade district are on a large scale, and wherever ore seems to be indicated in the portions of the Lake Superior region where it has been most active its men are to be found.

D. E. W.

The Southern Power Company.—The purchase by this company of an important water power on the Broad River, in South Carolina, makes a total of ten falls now owned by the company. By the time these are all developed they will provide some 150,000 horse-power, which will be distributed to cotton mills throughout the Piedmont region of North and South Carolina. By the acquisition of the stock of the Catawba Power Company the new company now owns a water power at Charlotte, N. C., which is delivering about 10,000 horse-power to Charlotte and other towns. Nine of the ten falls are on the Catawba, aggregating about 400 feet of fall, and are expected to produce from 100,000 to 150,000 primary horse-power. On the Broad River the fall recently acquired is 72 feet. One of the largest plants projected is at the Great Falls on the Catawba, where the company owns a fall of 175 feet. There will be three separate developments, and one of them is expected to deliver 30,000 horse-power by the end of 1906. The Southern Power Company is capitalized at \$7,500,000, of which \$2,500,000 is preferred stock, and has issued \$2,000,000 preferred stock and \$4,000,000 common. Bonds to the amount of \$5,000,000 have been authorized, but none has been issued.

PERSONAL.

G. B. Waterhouse has resigned as assistant professor of metallurgy at Columbia College, to accept the position of metallographist to the Lackawanna Steel Company at Buffalo, N. Y.

Everett Stuck, who has been connected with the National Cash Register Company, Dayton, Ohio, for the past 13 years, has resigned his position to become general superintendent of the American Laundry Machinery Company, Cincinnati.

Frank Nullmeyer, formerly superintendent of the Donora Works of the American Steel & Wire Company, has been transferred to the Braddock Works, to succeed J. G. Mustin, now superintendent of the Allentown Works. The vacancy at the Donora plant has not yet been filled.

Joseph G. Schwab has been elected a director of the Empire Trust Company, New York.

Dr. Henry S. Drinker, the president of Lehigh University, was the guest of honor at a dinner given January 19 at the Hotel Astor, New York, by the Lehigh University Club of Greater New York.

Beginning January 1 Joseph E. Thropp, Jr., will have an interest in the business heretofore conducted solely by Joseph E. Thropp at Earlston, near Everett, Bedford County, Pa., and elsewhere, and will be general manager of the plant. The Earlston Furnace, heretofore called the Everett Furnace, has a capacity of 75,000 tons of pig iron per year.

John F. Lent, Park Building, Pittsburgh, shippers' traffic manager and foreign freight agent, has been appointed traffic manager of the McClintic-Marshall Construction Company, Pittsburgh, and the John Dunlap Company, Carnegie.

Marshall Field, the great Chicago dry goods merchant who died in New York last week, was a director of the United States Steel Corporation. His term would have expired at the annual meeting in April.

The Railway Appliances Company, Old Colony Building, Chicago, announces that James L. Pilling has associated himself with the company, and it is now in position to furnish improved compressed air locomotive turntable devices, also hoisting engines, both portable and stationary, all equipped with the Pilling improved engines.

Albert Ladd Colby, retiring secretary of the Association of American Steel Manufacturers, was presented with a handsome silver service by the members of the association at the Pittsburgh meeting, January 20. Mr. Colby has been secretary of this body for the last nine years, and his resignation was due to the fact that he has gone into business as a consulting engineer.

Jesse J. Shuman, chief inspector of the Jones & Laughlin Steel Company, Pittsburgh, has been elected secretary and treasurer of the Association of American Steel Manufacturers.

P. H. Carey is now connected with the sales department of the Allis-Chalmers Company, at its branch office in the First National Bank Building, Chicago.

At the annual meeting of the Engineers' Club, T. C. Martin, in behalf of a committee, presented to the club in a happy speech a portrait of John C. Kafer, painted by Orlando Rouland. Mr. Kafer is an ex-president of the club, is treasurer of the Carnegie Fund and a member of the Building Committee of the new club house. It is expected that the latter will be ready for occupancy in October.

The John Fritz Gold Medal has been unanimously awarded to George Westinghouse of Pittsburgh for his invention of the air brake.

Severn P. Ker, affiliated with the Crucible Steel Company of America, Pittsburgh, during the past three years, has been appointed general sales agent of the Republic Iron & Steel Company, Chicago, to succeed George A. Baird, resigned. Mr. Ker's experience in the iron and steel trade has been extensive. In 1885 he was associated with Smith Brothers & Co., Allegheny, Pa., manufacturers of crucible and agricultural steel, and later became assistant secretary of the La Belle Steel Company,

which succeeded Smith Brothers & Co. about 1888. He later became secretary of this company and remained in that capacity until its absorption by the Crucible Steel Company of America in 1900. He was associated with the new company for several months and resigned to become vice-president and general manager of sales of the American Steel Hoop Company, with offices in New York. Three years ago he left the latter to accept an important position with the Crucible Steel Company of America. The offices of the Republic Company's general sales department, of which Mr. Ker is the head, will be removed to Pittsburgh about March 1.

OBITUARY.

FRANK E. DAVIS, superintendent of the blooming mill of the Newburg works of the American Steel & Wire Company, Cleveland, Ohio, died January 19 of pneumonia, aged 29 years.

HENRY C. FISH, for many years identified with the machinery and metal industries of Worcester, Mass., died in that city January 15, aged 81 years. He was a native of Marlboro, Vt., and as a boy went to Worcester where he learned the trade of blacksmith, which had been the vocation of the men of his family for generations. At the age of 19 years he was in business for himself. Entering the machine tool business some years later, he was for a time prominent in the management of the L. W. Pond Machine & Foundry Company, when it was reorganized as a corporation. For years he conducted a machine shop of his own, known as the H. C. Fish Machine Works, manufacturing engine lathes and other tools which are widely known. Mr. Fish leaves a widow, a son, Elmer C. Fish, formerly associated with him in business and now an instructor at the Washburn shops of the Worcester Polytechnic Institute, and two daughters.

An Improvement in Melting in the Cupola.

A process designed to facilitate the melting of iron in the cupola has been patented by Charles Hornbostel, 156 Broadway, New York, who is now placing the invention before the trade. By this process the air blast before it passes into the cupola is brought into intimate contact with a compound of permanganate of potash and sulphuric acid. By this contact the moisture is eliminated from the blast and it is claimed that by the action of these chemicals on the atmospheric oxygen the air is ozonized. The oxidizing energy of the blast is increased to such an extent that the nonmetallic components are eliminated from the fluid iron, making the cast iron uniform in grain and soft and easy to work. The iron thus treated retains its heat long enough to discharge its impurities and may be cast in iron molds, as it will not chill sufficiently to prevent its being worked.

It is also claimed that by forcing a current of air manipulated as described on to the surface of a mass of molten metal held in a ladle the non-metallic impurities are separated, passing to the surface and leaving the purified iron with properties insuring strong steel-like castings. The process is in successful use in several prominent foundries and smith shops and has been found advantageous in smith, tempering and forge work.

The Follansbee Brothers Company.—At the annual meeting of this company, held in Pittsburgh last week, the number of directors was increased from five to seven. The directors re-elected were: Nathaniel Holmes, H. Darlington, W. W. Bell, W. U. Follansbee and B. G. Follansbee. The additional directors elected were William Banfield and J. D. Lyon. B. G. Follansbee is president; William U. Follansbee, secretary and treasurer; George L. Follansbee, assistant treasurer; C. A. Wilson, assistant secretary; Wm. D. Reid, auditor and William Banfield, general manager. The company operates mills at Follansbee, W. Va., manufacturing the finer qualities of tin plates and sheets, and is actively pushing plans for the building of a basic steel plant to manufacture its own sheet and tin bars and particularly to secure uniformity in the quality of its raw material.

New Publications.

Suction Gas.—By Oswald H. Haenssger. Size 5 x 7 inches; pages 88. Published by the Gas Engine Company, Cincinnati, Cloth \$1.

Books on producer gas for power are scarce in this country, principally because interest in gas producers has only recently been awakened. That in turn is due to the cheaper and more plentiful supply of coal here than in Europe and particularly Germany, where the most has been done with gas producers. Appreciating the growing desire for reliable information on the part of those operating small or medium sized power plants, concerning the merits of suction gas producers, the author has prepared this little book. It covers in a not too technical way, the design, operation, cost of running, development and possible utility of suction gas producers.

Modern Machine Shop Construction, Equipment and Management.—By Oscar E. Perrigo, member the American Society of Mechanical Engineers. Size, 7¼ x 10¼ inches; pages 343, illustrations 308. Published by the Norman W. Henley Publishing Company, New York. Cloth \$5.

The author of this book has undertaken an ambitious task in the comprehensive subject he has selected. It is probably the first work ever printed dealing with every problem connected with the building and conducting of a modern factory or shop. The subject matter embraces the designing of the buildings, the installing of machinery, &c., and the turning out of work. For convenience the book is divided into three parts: The first part deals with the construction and the providing of power, heating and ventilating and lighting; the second part takes up the equipment, both mechanical and administrative, and the third part pertains to management, introducing a simple and efficient time and cost system. It can readily be appreciated that a work on so extensive a subject will interest many professions. The architect, the manufacturer, the engineer, the superintendent and even those in humbler capacities in the office or shop will find matter of instructive value in its pages.

Russell W. Davenport.—Published by G. P. Putnam's Sons, New York.

A thoroughly charming appreciation of the life and work of Russell W. Davenport has just been published, the author, however, giving no hint of his identity. Whoever he may be he was a sincere friend, capable and eager to do justice to a man who was not widely known, even in the professional world, until the later years of his life, after he had emerged from the fog of mystery with which everybody and everything connected with the Midvale Works have been surrounded. To metallurgists and engineers the account of his labors at that plant will be particularly interesting since he himself, with his characteristic modesty, never alluded to it. It was when he became identified with Bethlehem that the range of his attainments, his character and his work, secured for him a rapidly growing number of friends and admirers. Not alone they, but many to whom he was a stranger, will read with deep interest so sympathetic an account of a life well spent and too soon ended for the good of his country and of the profession which was rapidly learning to appreciate his character and his work.

The Standard Tin Plate Company, Canonsburg, Pa., has issued a circular to the trade calling attention to its reputation acquired for keeping promises. Among other statements made are the following: "On recommendations from the various conventions of associations during last year, we are prepared to fill orders in qualities and finishes as directed, naming corresponding prices for higher class goods for the use of can making or roofing, as the demand occurs to us. In this connection we favor the use of well coated high grade tin plate for the packing of certain class goods, on which we believe the additional cost to the buyer is more than repaid from the satisfactory returns from cans so applied, but we are pre-

pared to satisfy the wishes of our buyers where regular standard coke grade is suitable for their needs. We shall also continue to supply the various finishes of black plates, and roofing plates of coatings specified."

The Coal Miners' National Convention.

INDIANAPOLIS, Ind., January 23.—(By Telegraph.)—The United Mine Workers, at their convention to-day, adopted the following demands to be made on operators: That districts 13, 14, 21, 24 and 25 be admitted to the joint conference, also all outlying districts whose operators are willing to participate; general advance of 12½ per cent. over the present scale; a run of mine basis; a differential between pick and machine mining of 7 cents; a uniform outside day scale; all yardage and dead work be advanced 12½ per cent.; that no boy under 16 years shall be employed in or around the mines; that the new agreement becomes effective April 1, 1906, and expires April 1, 1907; that eight hours constitute a day's work. The resolutions adopted by the Shamokin Convention were indorsed, with the full support and co-operation of the international organization toward carrying them into effect. It was decided to present only the first demand, to admit Iowa, Kansas, Missouri, Michigan and Southwestern States at the joint conference on Thursday. If the operators decide not to admit them, the miners will meet again in convention to settle on the further policy to be pursued.

The operators' counter demands at the conference will be 10 to 15 per cent. reduction in wages, protection against stampede strikes and a better system of adjudication of local troubles. They will fight against the admission of Western States to the central joint conference.

The sensation of the convention was a personal debate to-day between President John Mitchell and Vice-president T. L. Lewis, which showed a lack of harmony among the national officers. The tilt was in the discussion of the anthracite situation.

It was formally announced at the convention that the anthracite operators and the miners' committees are to meet in New York February 15.

The open winter has enabled the Pennsylvania Railroad Company to accomplish much work in the Maintenance and Way Department which is ordinarily deferred until a much later period. This has necessitated the delivery of much track material which under normal conditions would not be required until March, April and May and which is to care for the rail renewals, ordinary repairs and new work which it is found possible to accomplish at this time. The rail renewals alone will require approximately about 250,000 pairs of splice bars, about 1,500,000 track bolts and 1,500,000 nut locks. The ordinary repairs will require, approximately, about one-quarter of this quantity of splice bars and a proportionate number of track bolts and nut locks, while the new work, as far as can be determined, will require about one-half the quantity that is needed for the renewals. The electrification of the West Jersey & Seashore Railroad Company also demands a large quantity of track material, which, with the regular requirements of the Pennsylvania Railroad Company, brings the total to a pretty respectable amount.

The Buffalo Foundrymen's Association is in a very prosperous condition, with a membership of thirty-six foundry firms and four applications to be acted upon at the next regular monthly meeting. The attendance at the meetings during the past year has averaged 90 per cent—a good indication of the interest taken in the work. Twenty-two members of the association are affiliated with the National Foundrymen's Association. The members are especially interested in the employment department of the association, many giving employment only to those who are recommended by the bureau. The Committee on Topics has communicated with several speakers who are expected to address the association in the coming year.

NEWS OF THE WORKS.

Iron and Steel.

The Northern Alabama Coal, Iron & Railway Company is making repairs on its blast furnace at Talladega, Ala., and expects to put it in blast in the near future.

The blast furnace property of the New River Mineral Company, Ivanhoe, Va., has been sold to Robert A. Carter, president of the Monongahela Iron & Steel Company, Pittsburgh, Pa. The furnace will be repaired and put in blast as soon as possible. The transfer of the property was made on January 17, 1906. The intention of the new owners is to make iron for the use of the Monongahela Iron & Steel Company at Pittsburgh. Heretofore the furnace has made foundry iron for the general market.

The Bird furnace, formerly Lawrence, of the Bird Iron Company, Ironton, Ohio, will go in blast about February 1.

Norton Iron Works, Incorporated, Ashland, Ky., expects to put its furnace in blast in April or early May of this year on the completion of extensive repairs.

The Carnegie Steel Company will rebuild its Greenville Works, at Greenville, Pa., recently destroyed by fire. By working day and night it is expected to have part of the new plant in operation in from four to six weeks.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, is increasing its puddling capacity by the erection of two double puddling furnaces, one of which has been started and the other will be ready in a short time.

The Brier Hill Iron & Coal Company, operating Grace furnace at Youngstown, Ohio, held its annual meeting last week and elected George Tod, John Tod, J. G. Butler, Jr., David Tod and H. H. Stambaugh, directors. John Tod and David Tod succeed Henry and William Tod on the board. The directors organized by electing George Tod, president; J. G. Butler, Jr., vice-president and general manager, and H. H. Stambaugh, secretary and treasurer.

The National Car Coupler Company, Chicago, is contemplating the erection of a new steel plant. Nothing has been decided upon as yet and it will be a month or six weeks before the matter comes to a head. The company is a large manufacturer of freight and passenger couplers, steel platforms and small open hearth steel castings.

General Machinery.

It is not believed that much in the way of machine tools will be required for equipping the new addition to the machine shop of the Hale & Kilburn Mfg. Company, Philadelphia, Pa. The company does not know at this time just what will be required.

The Palace Automobile Station Company, 348 Trumbull street, Hartford, Conn., is to build a machine shop, 40 x 65 feet, for which new tools will be required, though just what will be needed is not yet determined.

The Menominee Electric Mfg. Company, Menominee, Mich., has purchased a site for a new plant. The main building to be erected will be 62 x 335 feet. All equipment has been purchased.

The Barnett Drop Forging Company, Easthampton, Mass., which has been conducting a drop forging business for the past six months, has incorporated, with capital stock of \$50,000, and the following officers: President, A. P. Wittman, Philadelphia; treasurer and clerk, Henry E. Barnett, Easthampton; directors, these officers and Winslow H. Edwards, W. L. Barnett and William F. Coyle. The company has confined itself to the manufacture of general forgings, but contemplates manufacturing specialties of its own in the near future.

The recent orders for heating and ventilating apparatus secured by the B. F. Sturtevant Company, Hyde Park, Mass., include Atlantic Coast Line Railroad, South Rocky Mount shops, North Carolina; Pennsylvania Railroad, freight car paint shop, Altoona, Pa., and boiler and tank shop, Trenton, N. J.; Rochester & Pittsburgh Railroad, office building, Rochester, N. Y.; Canadian Northern Railroad, roundhouse, Edmonton, Canada; American Tissue Paper Company, paper mills, Raubsville, Pa.; International Silver Company, office building, Meriden, Conn.; National Tube Company, machine shop, McKeesport, Pa.; Central Mfg. Company, factory and dry kiln, Connorsville, Ind.; Opaque Shade Cloth Company, factories K and L, West Pullman, Ill. Orders for other apparatus cover economizer plant, New Orleans Sewage & Water Board, New Orleans, La.; new type enclosed vertical engines, Ingrahamville Dye Works, Pawtucket, R. I.; mechanical draft apparatus, Philadelphia & Reading Railroad, Reading, Pa.; American Magnesia Covering Company, Plymouth Meeting, Pa.; Brooklyn Rapid Transit Company, Brooklyn, N. Y.; American Can Company, Hoopston, Ill.; generating sets, S. Slater & Sons, Webster, Mich.; Charles L. Stickney & Co., St. Paul, Minn.; United States Hotel, Easton, Pa.; Old Dominion Steamboat Company, New York; Peter Hauch & Co., Harrison, N. J.; Alton Paving Building & Fire Brick Company, Alton, Ill.

The Van Buren, Heck & Marvin Company, manufacturer of a traction ditcher, Findlay, Ohio, has received an order from Herman & Co., Antwerp, Belgium, for the shipment of a ma-

chine to Sousse, Tunisie, Africa. Claim is made by the manufacturer that in a test the machine, operated by four men and a team, cut a trench 42 inches wide and 5 feet deep at the rate of 7 feet per minute through ground frozen 6 inches deep, or accomplished the work of 600 men. Claim is also made that for steady work the machine is equal to 300 men each day it is operated, running at an expense of 1 1/4 tons of coal, besides the cost of the men and team.

The C. E. Sutton Company, Toledo, Ohio, owing to the rapid growth of its steel casting department, has been compelled to increase its productive facilities fully 33 1-3 per cent. by increase in the foundry and machinery departments.

The Morgan Construction Company, Worcester, Mass., has recently been awarded the following contracts: Illinois Steel Company, Milwaukee, Wis., four Edwards automatic cooling beds, back shear tables, &c.; two 190 feet long, two 125 feet long, the tables to handle straight product of the 12-inch. Nos. 1 and 2, 9 inch and the 8 inch merchant mill trains at the Bay View works, and are designed for handling flats up to 6 inches wide; Georgs-Marien-Bergwerks & Huetten-Verein, Osnabrueck, Germany, one merchant mill with two automatic cooling beds 40 and 300 feet and a storage pocket equipment for bars 300 feet long, the mill to take a 4 x 5 inch billet, and roll rounds from 7-16 to 1 13-16 inches or equivalent sections, or it can be operated with small billets to finish down to 1/4 inch round or equivalent; Youngstown Sheet & Tube Company, Youngstown, Ohio, one continuous skelp mill for rolling skelp 4 1/4 x 1/2 inch and lighter sections, including heating furnaces, gas producers, shears and all other auxiliary equipment, the mill to supplement a Morgan continuous billet and a Morgan continuous sheet bar mill ordered last year and now in process of erection; Milliken Bros., Staten Island and New York, two special continuous heating furnaces for beam blanks with special pull out mechanism and five 33-inch Dyblie valves for open hearth work. The rights for the sale of these valves which were developed by J. A. Dyblie at the works of the Illinois Steel Company, have been acquired by the Morgan Construction Company.

The Robins Conveying Belt Company, New York, has entered an order for a 30-inch conveyor for a gold dredge in the Oroville District, Cal. Among other orders on hand is one for 24 and 18 inch belt conveyors from the Pratt & Whitney Company, Hartford, Conn.; mast and gaff rig, Pawtucket Gas Light Company, Pawtucket, R. I.; Solvey Process Company, Syracuse, N. Y., 16 and 24 inch belt conveyors; Highland Coal Company, Somerville, Mass., bucket elevator; Western Engineering & Construction Company, San Francisco, Cal., 30-inch conveyor.

The Lewis Foundry & Machine Company, Pittsburgh, works at Coraopolis, Pa., and builder of rolling mill machinery of all kinds, has recently installed one 12-inch train of rolls for the Duncannon Iron Company, Duncannon, Pa., for rolling merchant iron. The company has a large number of orders on its books for lever, squaring and vertical shears and is also booking a good many orders for its even depth chilled rolls, of which it makes a specialty.

The copartnership of S. G. Seligman and J. B. German, dealing in new and second-hand machinery as the Tamaqua Machinery Company, Tamaqua, Pa., has been dissolved by mutual consent. All the assets are to remain the property of S. G. Seligman, but J. B. German is to have the right to do business hereafter on his own account as the Tamaqua Machinery Company.

The Snyder Pump & Well Company, Richmond, Va., well driller, will move into new quarters as soon as possible. A considerable sum of money will be expended in reheating and relighting the building for its purposes.

Power Plant Equipment.

The Cheboygan Boiler Works, Cheboygan, Mich., is planning to establish a branch shop at the Soo, a site having already been purchased for that purpose. John Swartz, who has operated a boiler shop at Manistique, Mich., for the past year, has purchased an interest in the Cheboygan works and the machinery from his shop will be removed to the new Soo branch, which will be in charge of Charles Swartz. Work now under way at the Cheboygan works includes a 125 horse-power boiler for the Blockman Pump Company, Petoskey; a steel dipper arm, table and crane for the Canadian Dredging Company of the Soo; a steel dredging crane and table for the Hubbard Dredging Company of the Soo; two steel spuds, 24 x 24 and 50 feet long, for the Prior Dredge Company of the Soo; two 5 x 16 foot boilers for the Nelson Lumber Company, Pellston, and a 72-inch stack, 120 feet high, for the Petoskey Paper Company.

Among recent orders secured by the Westinghouse Machine Company, Pittsburgh, Pa., for its various machines are: Westinghouse-Parsons steam turbines, Brooklyn Rapid Transit Company, Brooklyn, N. Y., 7500 kw.; Edison Electric Company, Los Angeles, Cal., 7500 kw.; Laclede Power Company, St. Louis, Mo., two 2000 kw.; Chautauqua Traction Company, Jamestown, N. Y., 1500 kw.; Mt. Whitney Power Company, Visalia, Cal., 1000 kw.; North Shore Electric Railway, San Francisco, Cal., 1000 kw.; Winston-Salem Power Company, Winston-Salem, N. C., 750 kw.; Deacon Mfg. Company, New Bedford, Mass.; Water, Light & Gas Company, Hutchinson, Kan.; Pressed Steel Car Company, Pittsburgh, Pa., and Solvay Process Company, Syracuse, N. Y., 500 kw.; Baltimore & Ohio Railroad Company, Bal-

timore, Md. Steam engines: Illinois Steel Company, Chicago, Ill., 38 and 76 x 54 inch vertical cross compound Corliss, 3000 horse-power. Standard and Junior: International Steam Pump Company, Colorado Fuel & Iron Company, St. Louis & San Francisco Railway Company, Sonneborn Realty Company, Pullman Car Works, American Pipe Mfg. Company, Parks Gold Mine, Burgess Electric Company, Wm. E. Peck & Co., Chicago, Milwaukee and St. Paul Railway. Vertical gas engines: A. Zimmerman, McKeesport, Pa.; Edgeworth Water Company, Edgeworth, Pa.; W. R. Morrow, Peru, Kan.; Standard Oil Company, Camden, N. J.; McClintic-Marshall Construction Company, Rankin, Pa.; Warren & Jamestown Street Railway Company, Warren, Pa.; Wehrle Company, Newark, Ohio; Wm. R. West, New Bedford, Mass.; Sewickley Electric Light Company, Quaker Valley, Pa.; Youngstown Car Mfg. Company, Youngstown, Ohio. Roney mechanical stokers: Interborough Rapid Transit Company, New York, to equip 7200 horse-power of boilers; United Railways & Electric Company, Baltimore, Md., 3600 horse-power; Twin City Rapid Transit Company, Minneapolis, Minn., 3300 horse-power; Midvale Steel Company, Nicetown, Pa., 3120 horse-power; Helena Power Transmission Company, Butte, Mont., 2700 horse-power; Phoenix Iron Company, Phoenixville, Pa., 1800 horse-power; Union Salt Company, St. Louis, Mo., 1660 horse-power; American Car & Foundry Company, Detroit, Mich., 1050 horse-power; St. Louis Portland Cement Company, St. Louis, Mo., 1050 horse-power.

Harry P. Saunders, Philadelphia, Pa., who has taken out a permit for a new factory building, 68 x 132 feet, expects to purchase the following power plant equipment: 80 to 100 horse-power slow speed Corliss engine, 125 horse-power water tube boiler, 70-kw. generator and appurtenances.

The Garwood Foundry & Machine Company, Garwood, N. J., has increased its capital stock from \$50,000 to \$100,000, and is making its plant one of the most up to date boiler works in the country, equipping it with steam, electric and air power. The company is now turning out Bernhard boilers in all sizes, from 200 to 9000 feet, inclusive.

Foundries.

The Minster Machine Company, Minster, Ohio, has just closed a contract for a new foundry building, 70 x 100 feet, and will require 60-inch cupola, two traveling cranes and a 10 or 12 foot, two head, boring mill.

The Textile Finishing Machinery Company, 17 Exchange place, Providence, R. I., is to make considerable extensions in connection with its occupancy of works at Warren, R. I. There will be a foundry, pattern shop and blacksmith shop.

John G. Snowden has purchased the Armstrong Iron Works, Vineland, N. J., which he is now operating, turning out light and heavy iron castings. He expects to enlarge the plant some time this year.

The Donaldson Iron Company, Emaus, Pa., manufacturer of cast iron pipes, contemplates building a new foundry.

The North Lebanon Foundry Company, Lebanon, Pa., has arranged to double the size of its foundry, which was only erected last August. In addition the company has been compelled to purchase another building for pattern storage and offices. S. P. Rank, is president; E. P. Kreider, first vice-president; C. J. Leltz, second vice-president; S. N. Gingrich, secretary and sales manager; A. W. Patschke, treasurer; J. H. Walborn, superintendent.

The Ferro Machine & Foundry Company, Cleveland, Ohio, is successor to the Hoffman Hinge & Foundry Company through re-organization. The articles of incorporation place the capital stock at \$250,000, with E. W. and Crispin Oglebay, F. S. Masten, J. T. Leitch and N. B. Snavely as incorporators. Increased business necessitated additional capital, which was furnished, and the new corporation formed. An up-to-date machine shop has been built in connection with the foundry heretofore operated, which is capable of turning out gas engines for automobile or marine purposes. For some years the company has specialized in automobile castings and this will continue to be the principal product.

The Vulcan Foundry, at New Castle, Pa., has resumed operation after a long shut down caused by scarcity of orders.

The Moline Foundry Company, Moline, Ill., will build a small addition to its foundry.

The Star Mfg. Company has been incorporated at Milwaukee to do a general manufacturing and foundry business, with a capital stock of \$50,000, and Joseph Skobis, Howland Russell and Henry Ferge, as incorporators.

The Gould Coupler Company, Depew, N. Y., is adding to its open hearth steel plant a new building, 172 x 372 feet, of brick and steel, with two side bays each 60 x 300 feet. The present open hearth steel plant consists of a building 252 x 390 feet erected two years ago, and the old and new buildings together will have a total floor space of 201,240 square feet. The new building is to be equipped with two 35-ton and two 10-ton electric cranes. The plant will be supplied with four 20-ton open hearth furnaces—two already finished, the third nearly completed and the fourth under way. The company expects to have the new additions to the plant completed about March 1. It has also recently completed a new laboratory building two stories high. Two Ingersoll-Sergeant direct con-

nected electric driven air compressors will be installed at once, having a capacity of 1000 cubic feet of free air per minute. This augmentation of capacity and equipment is required to take care of largely increased business in the manufacture of bolsters, friction draft gear and other locomotive and railroad castings, of which the company makes a specialty.

Bridges and Buildings.

The Bureau of Engineering of the Department of Public Works, Chicago, has recommended to the City Council an appropriation of \$2,590,000 for the erection of 12 new bridges. Of this amount it is estimated to expend \$946,500 during the present year. Eight of the structures will be of the bascule type and four will be fixed spans where the river is unnavigable. The bascule type bridges will cost in the neighborhood of \$250,000 each, while the combined cost of the four others will be about \$50,000.

The Hennepin Bridge Company, Minneapolis, Minn., has received a contract for the erection of a steel bridge across the Watonwan River near Vernon Center, Minn., at a price of \$2848.

The Chesapeake Iron Works, Baltimore, Md., has increased its capital stock from \$15,000 to \$50,000, to take care of the increasing demands for its products. The company's plant is admirably located for receiving and shipping material over the Baltimore & Ohio Railroad and has furnished considerable structural and ornamental iron work for many of the important new structures in Baltimore.

Fires.

Fire in the Anthony & Cushman Building, Taunton, Mass., caused a loss of about \$35,000 January 16. The tenants who suffered include the Taunton Wire Nail Company, the Globe Mfg. Company, makers of wire nails, and the Taunton Aluminum Company, manufacturer of aluminum novelties.

One of the buildings of the Bridgeport Deoxidized Bronze & Metal Company, Bridgeport, Conn., manufacturer of composition castings, was damaged by fire January 20, with estimated loss of \$10,000.

The plant of the Natchez Brick Company, Natchez, Miss., was recently destroyed by fire. Loss is about \$20,000.

The pattern shop of the Carbondale Machine Company, Carbondale, Pa., was recently destroyed by fire. The loss will reach about \$10,000.

The McFeely Brick Company's plant, near Latrobe, Pa., was burned January 20. The loss is said to be \$100,000.

The pattern storage house at the Pencoyd Iron Works, Philadelphia, Pa., was burned January 21. The loss is about \$150,000.

The plant of the J. B. Shoo Saddlery Company, Quincy, Ill., was destroyed by fire last week. The loss is placed at \$100,000.

Hardware.

A stockholders' meeting of the J. M. Mast Mfg. Company, Littitz, Pa., was held last week and a new Board of Directors was elected. It was voted to change the present name to that of Animal Trap Company, because of the purchase of this larger and better known plant, which will be removed from Abingdon, Ill., as soon as new factory buildings are completed at Littitz. The new Boards of Directors elected J. M. Mast, president; N. B. Leaman, vice-president; J. C. Brubaker, secretary; N. K. Brubaker, treasurer, and F. W. Shultz, business manager. The capitalization of the corporation under its new charter is \$150,000.

Grier Brothers Company, Pittsburgh, Pa., has applied for a charter with a capital of \$75,000. The company will take over the present business of Grier Brothers, manufacturers of tin ware, hollow ware, house furnishing goods and mining supplies.

The Potato Implement Company, Traverse City, Mich., has reorganized with a capital stock of \$25,000, of which \$16,500 has already been subscribed. The following officers were elected: President, E. J. Fulghum; vice-president, A. V. Friedrich; secretary and treasurer, J. W. Milliken. The company's product consists of hand potato planters, corn planters, dry powder guns, hand spray pumps, atomizers and knapsack sprinklers. Active operations were resumed in the plant January 22.

The Penn Shovel Company, Warren, Ohio, has elected Arthur Walton, president; George L. Fordyce, vice-president; Washington Hyde, secretary, and William Brown, treasurer. Earnings of the company for the past year were reported to be satisfactory.

The Hendee-Katz Brush Company has been incorporated at Milwaukee, Wis., with a capital stock of \$10,000, and C. C. Hendee, Maud K. Hendee, Edw. M. Katz and Alice Katz as incorporators. Mr. Hendee has been identified with the manufacture of wire brushes for a period of 14 years. Of recent years he has been at the head of the Hendee Wire Brush Company, but has sold his stock in that concern to organize the new business. The company has established itself in a factory at 185 Milwaukee street and is installing a complete new line of machinery especially designed for the manufacture of the goods.

Miscellaneous.

The Howe Engine Company, Indianapolis, Ind., has shipped its first electric automobile hose wagon and chemical engine (said to be the first ever built) to the city of Hopedale, Mass. It has 16 horse-power motors. It is a combination hose and ladder wagon and chemical engine, carrying two 35-gallon tanks, two 3-gallon

tanks, 1000 feet of hose, 200 feet of chemical hose, a dozen buckets, four extension ladders and the usual equipment of axes, bars, lanterns, &c. On good streets it will make 16 miles an hour or more. The company is also making for the city of Larue, Ohio, a 35 horse-power gasoline fire engine. Gasoline not only operates to propel it but also to throw the water.

The Lovokin Pipe Expanding & Flanging Company, a Philadelphia concern, has been chartered at Harrisburg, Pa., with a capital of \$10,000.

The Peerless Tank & Seat Works, Evansville, Ind., with \$100,000 capital, will establish a plant to manufacture lumber, wood work, brass and metal pipe, iron, gas and steam fitting supplies. The directors are Adam Helfrich, Wm. A. Henn, J. B. Henn and F. W. Kingsbury.

The Indianapolis Fence Machine Mfg. Company, Indianapolis, Ind., has been incorporated with \$10,000 capital stock to manufacture fence weaving machines, &c. The directors are Anson L. Hassler, Forest E. Hassler and Fernwell S. Hassler.

The M. Hersch Iron Company, Cleveland, Ohio, has bought the plant of the Frash Process Soda Company, located on East Madison avenue and the Lake Shore & Michigan Southern Railway, Cleveland. As it will take a year and a half probably to wreck the plant, the Hersch Company has moved its business office from 600 Canal street to the Frash plant.

The New Castle Portland Cement Company, with a capital of \$800,000, will soon start its new cement works at New Castle, Pa. It will have a daily output of 1500 barrels of cement and will employ over 400 men in its plant, which consists of 13 large buildings. Its output will also include daily 80,000 bricks, 1500 tons of crushed limestone and 50 tons of burned lime. Edwin N. Ohl is president; Charles Greer, vice-president; Edwin S. Norris, secretary and treasurer.

The Pittsburgh Steel Company, Pittsburgh, works at Monessen, Pa., and manufacturer of wire rods, wire and wire nails, has recently built a very large warehouse at Memphis, Tenn., to which all river shipments are made by barge from the mills at Monessen.

The James H. Watson Company, Crawfordsville, Ind., engaged in the manufacture of steel and galvanized iron products, has been reorganized and incorporated with \$100,000 capital stock. The directors are Malby R. Falley, Auston H. Long and Mrs. Elizabeth Watson. The company will build a new plant.

The large plant of the Armitage-Herschell Company, North Tonawanda, N. Y., boiler maker and manufacturer of steam merry-go-rounds and other amusement apparatus, has been purchased by the Herschell-Spillman Company of the same place, which manufactures a similar line, and will be operated as a branch of the present plant of the company.

The Rutland Machine & Automobile Company, successor to Clark & Matthews, Rutland, Vt., is in the market for an elevator suitable for handling automobiles in storage.

The Gall-Webb Mfg. Company has been incorporated with a capital stock of \$25,000 at Buffalo, N. Y., to manufacture telephones and electrical and mechanical apparatus. The directors are Henry M. Gall, A. M. Gall and Wyatt W. Smith of Buffalo and John W. S. Webb and Charles W. Webb of Cleveland.

The Niagara Motor Boat Company has been incorporated at Tonawanda, N. Y., and has commenced the erection of a plant for the construction of motor boats. C. V. Twombly, M. Chapman and L. Chapman of Tonawanda are the principal incorporators.

The Kinnear Mfg. Company, Columbus, Ohio, is now fully installed in its new plant in the northwestern part of the city and is in operation in all departments. The new plant is modern in every respect and well equipped with the latest machinery devised for the manufacture of steel rolling doors and shutters. The former plant of the company is now occupied by the Bryant Steel & Rim Company, which is turning out a new automobile wheel rim.

The Michigan Pipe & Iron Company, Richmond, Mich., has organized for the manufacture of iron culvert pipe, and will erect a plant, the location of which has not yet been selected. George C. Crane, is president; David J. Wilson, secretary, and L. T. Stratton, treasurer.

Larkin Brothers, manufacturers of oil and gas well packers, Bartlesville, Ind. Ter., have had an addition erected to their factory. The equipment of the building consists of one Bridgeford lathe, one Stockbridge 24 inch shaper, bought of Manning-Maxwell & Moore, Pittsburgh, Pa., one Lodge & Shipley lathe, one Sibley & Ware 24 inch drill press, purchased from Brown & Zortman Machinery Company, Pittsburgh, Pa., shafting and accessories from C. A. Turner, Pittsburgh, and one 1100 pound steam hammer from Niles-Bement-Pond Company, Pittsburgh, Pa. The firm now requires rubber cylinders.

The Hermann Bed Spring Company has been incorporated at Milwaukee, Wis., with a capital stock of \$12,000 by Charles A. Hermann, William A. Hermann and James T. Drought.

The Peabody Leather Machinery Company, Peabody, Mass., manufacturer of hide and leather working machinery, has been organized, and will operate an existing plant. The officers are: President, John A. Metzler, formerly with the Vaughn Machine Company and the Vaughn-Rood Machine Company; vice-president, George B. Norgrove, an inventor and designer, formerly

of the Vaughn-Rood Machine Company; and secretary and treasurer, Frank H. Teel, for the past two years a manufacturer of cylinder, blades and belt knives.

The Wabash Railroad has placed orders for additional cars which include 2000 gondola cars, placed with the Standard Steel Car Company, Butler, Pa., and 2000 gondola cars with the Western Steel Car & Foundry Company. The cars will be of 100,000 pounds capacity and will have steel forge frames.

James Bonar & Co., Incorporated, Pittsburgh, has received a contract for installing three complete automatic Bonar oiling systems at the Mingo Works of the Carnegie Steel Company, Mingo Junction, Ohio.

At the annual meeting of the Parson Mfg. Company, New York, the following officers were elected: H. E. Parson, president; G. L. Prentiss, vice-president; H. T. Parson, second vice-president; H. M. Parson, chief engineer; C. H. Parson, secretary and treasurer; S. H. Parson, assistant secretary. The company reports that the last year has been exceedingly prosperous and that the business is continuously increasing. A number of large contracts for its system of furnace construction have been recently closed with some of the most representative concerns in the country. The company has recently issued a very interesting booklet on combustion in general and Parson system in particular.

The Crestline Mfg. Company, Crestline, Ohio, manufacturer of brass goods, pumps, &c., has been compelled to again increase its manufacturing capacity by the erection of an additional building, 40 x 100 feet, to be used for warehouse and storage purposes, this being the second increase in 18 months.

The Ohio Structural Iron Company, Sandusky, Ohio, manufacturer of architectural iron work, iron fencing, &c., will erect a new addition to its present plant, 50 x 40 feet, necessitated by the rapid increase in the demand for its product.

The annual meeting of stockholders of the Forsyth Pattern Company was held in its offices in Youngstown, Ohio, on January 16, the following directors being elected: George Rudge, Jr., W. H. Rudge, John Gallagher, W. H. Parks and Frank D. Runser. The directors will meet and organize on January 31.

Scranton Rolling Mill to Reopen.

The project to use at least part of the old plant of the Lackawanna Iron & Steel Company, at Scranton, Pa., will undoubtedly necessitate the purchase of considerable new machinery to place the present buildings in proper shape and to equip the new buildings which will be erected. The property, comprising 21 acres, upon which there are several buildings, has been purchased by J. W. Kemmerer of Bittenbender & Co., who is organizing a company with a capital stock of \$150,000, and will install a plant to consist of puddling and rolling mill and other departments, the entire output of which will be handled by Bittenbender & Co.

At the start the plant will produce about 2000 tons per year. The largest building standing on the site will be used as the rolling mill, and to this building, which is about 100 feet square, a steel addition, 100 x 200 feet, will be built. The other buildings will be used for various purposes in connection with the manufacture of merchant iron. The plant will be operated by 750-horsepower of upright boilers and engines and at the start three puddling and two heating furnaces will be placed in operation, as will also the large squeezer and the rolls for converting the merchant bars into various sizes. Willis D. Kemmerer, son of John W. Kemmerer, will be general manager of the new company.

The Milwaukee Metal Trades and Founders' Association.—The first annual meeting and banquet of the combined Milwaukee Metal Trades and Founders' Association was held at the Plankinton House January 24. Members assembled at 6.30 o'clock for the election of officers, after which they repaired to the dining room for dinner and short talks by prominent speakers and members on subjects relating to the foundry business. W. J. Turner presided at the dinner under the title of general superintendent, and talks were made on the following subjects: "Report of the President," A. J. Lindemann, president of the A. J. Lindemann & Hoverson Company; "The Panama Canal," S. L. J. Knox of the Bucyrus Company; "National Founders' Association," O. P. Briggs, president of that association; "Milwaukee School of Trades," J. S. Church, superintendent of the school; "Reciprocity in Industrial Relations," Rev. C. H. Beale; "Shop Talk," interspersed with entertaining stories, W. H. Reese of the Patton Paint Company.

The Iron and Metal Trades

The open winter thus far has encouraged consumption and has kept it at an enormous rate. The pressure for prompt deliveries continues, and it is only Old Material which has suffered since Scrap is coming out much more freely than it ordinarily does at this season of the year. Despite strenuous efforts to maintain values, Old Material is weak.

Negotiations are reported as pending between Valley makers and the Steel Corporation for a large tonnage of Pig Iron for the second quarter, the requirements not having been covered as yet. The three or four large buyers in the Pittsburgh district will clean up the available supply, so that the Steel plants in other sections of the Central West are buying considerable Virginia Basic Pig, particularly since Iron purchased in Alabama is not coming along freely. In the East Steel makers are urging shipments, but there have been no large transactions lately, aside from the purchases made for the second quarter by an Eastern Pennsylvania plant of an aggregate of about 20,000 tons.

Founders are in the market constantly, but it is a noteworthy fact that the Southern producers are not as firm as they have been, and that increasing quantities of Southern Iron are available at \$14, Birmingham, for No. 2.

Orders keep rolling in in nearly every branch of the Finished trade, in fact the leading interest could book very much more, were it not for the fact that deliveries cannot be promised in many lines before six months. This is most sharply felt in the export trade, in which the demand is very heavy. A good deal of business must be declined. This has been notably the case in Sheet and Tin Plate Bars lately.

During the past few weeks there has been a revival of the demand for Steel products from Japan and China, which had practically ceased with the close of the war.

Plate makers have determined to increase the extra on Marine Steel over Tank Steel from 0.2c. to 0.4c. per lb. and to increase the Pacific Coast price from 1.40c. to 1.60c., base, Pittsburgh.

The open winter is causing a heavy demand for Structural Material from all over the country, particularly for eight to ten story buildings, which are further along than expected. Among the larger contracts placed are about 7500 tons for the New York Central Post Office taken by McClintic-Marshall and 6000 tons for a Pittsburgh skyscraper. The city of Chicago is to build 12 bridges, which will require 25,000 tons of Plates and Structural Material, eight of these bridges being projected for this year.

Some welcome contracts have come to the Merchant Pipe mills. These include 90 miles of 18-inch Pipe for the Ohio Fuel Company, and 50 miles of 8-inch Pipe for the Union Oil Company of California. The large additions to Pipe capacity during the last year, by the building of the great works at Lorain, and by enlargements at McKeesport and elsewhere, have militated against an upward movement in this branch.

The Pennsylvania Railroad has placed orders for 30,000 tons of Steel Rails in addition to former purchases, thus carrying its total for this year up to 230,000 tons. The Atlantic Coast Line has placed 10,000 tons, and the Chicago Great Western 5000 tons. The Southern Pacific has an inquiry out for 10,000 tons.

Reports from Pittsburg and from Chicago indicate a weakening in Iron Bars.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

Jan. 24, Jan. 17, Dec. 27, Jan. 25,
1906. 1906. 1905. 1905.

FIG IRON:

Foundry No. 2 Standard, Philadelphia	\$18.50	\$18.50	\$18.25	\$17.50
Foundry No. 2 Southern, Cincinnati	16.75	16.75	16.75	16.25
Foundry No. 2 Local, Chicago...	19.25	19.25	19.25	17.50
Bessemer, Pittsburgh	18.35	18.35	18.35	16.85
Gray Forge, Pittsburgh	17.35	17.25	16.85	16.10
Lake Superior Charcoal, Chicago.	20.50	20.50	20.00	18.50

BILLETS, RAILS, &c.:

Bessemer Billets, Pittsburgh....	27.00	26.00	26.00	23.00
Forging Billets, Pittsburgh.....	32.00	30.00	30.00	25.00
Open Hearth Billets, Phila.....	29.00	29.50	30.00	25.00
Wire Rods, Pittsburgh.....	34.00	34.00	32.50	31.00
Steel Rails, Heavy, Eastern Mll.	28.00	28.00	28.00	28.00

OLD MATERIAL:

O. Steel Rails, Chicago.....	16.50	16.50	16.50	16.00
O. Steel Rails, Philadelphia....	17.75	18.25	18.25	17.50
O. Iron Rails, Chicago.....	23.00	23.00	23.00	21.00
O. Iron Rails, Philadelphia....	24.50	24.50	24.50	23.00
O. Car Wheels, Chicago.....	19.00	19.00	19.00	16.50
O. Car Wheels, Philadelphia....	18.75	18.75	18.75	16.00
Heavy Steel Scrap, Pittsburgh...	17.00	17.00	17.50	16.00
Heavy Steel Scrap, Chicago....	15.00	15.00	15.00	14.50

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia.	1.83½	1.83½	1.83½	1.63½
Common Iron Bars, Chicago....	1.80	1.80	1.85	1.65
Common Iron Bars, Pittsburgh..	1.85	1.90	1.90	1.74½
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.54½
Steel Bars, Pittsburgh.....	1.50	1.50	1.50	1.40
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.64½
Tank Plates, Pittsburgh.....	1.60	1.60	1.60	1.50
Beams, Tidewater, New York...	1.84½	1.84½	1.84½	1.64½
Beams, Pittsburgh	1.70	1.70	1.70	1.50
Angles, Tidewater, New York...	1.84½	1.84½	1.84½	1.64½
Angles, Pittsburgh	1.70	1.70	1.70	1.50
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.55	1.55
Skelp, Sheared Steel, Pittsburgh	1.60	1.60	1.65	1.60

SHEETS, NAILS AND WIRE:

Sheets, No. 27, Pittsburgh.....	2.30	2.30	2.20	2.20
Wire Nails, Pittsburgh.....	1.85	1.85	1.80	1.75
Cut Nails, Pittsburgh.....	1.75	1.75	1.75	1.75
Barb Wire, Galvanized, Pittsburgh	2.30	2.30	2.25	2.20

METALS:

Copper, New York.....	18.12½	18.75	19.00	15.25
Spelter, St. Louis.....	6.35	6.45	6.50	6.15
Lead, New York.....	5.75	5.80	5.95	4.45
Lead, St. Louis.....	5.45	5.85	5.80	4.50
Tin, New York.....	36.50	36.40	35.90	29.37½
Antimony, Hallett, New York...	14.25	14.25	13.00	8.50
Nickel, New York.....	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York.....	3.69	3.69	3.59	3.74

Chicago.

FISHER BUILDING, January 24, 1906.—(By Telegraph.)

In both raw and finished lines the Western Iron and Steel market is without loss of strength. While the comparative lull in the Pig Iron demand has been accompanied by the usual rumors of lower price, the only softening reported is in Southern Iron values, and this is limited entirely to odd lots and off grades, the standard brands being firmly maintained on the basis of \$14.50, Birmingham, for No. 2. The erection and reconstruction of 12 city bridges specified in the Chicago Public Works appropriation will require upward of 25,000 tons of Plates and Shapes, and work on eight of these is to be undertaken this year. This tonnage, with that required in track elevation and new buildings this year, will fully equal last year's consumption, which exceeded all previous records. Cast Iron Pipe tonnage closed in the West last week was heavy for this season and included 6500 tons for St. Louis and 1800 tons for a large distributor in Indianapolis. While the Illinois Steel Company has its entire Plate tonnage sold through the first half, specifications temporarily are light and new business is rather eagerly sought by Eastern manufacturers who are in a position to make deliveries in less than a month. Bar Iron is responding to the lower values prevailing for Scrap and 1.80c. is readily done. Rail orders for the week aggregate 10,000 tons, and specifications for supplies are swamping the mills.

Pig Iron.—Western consumers are watching the trend of the market closely, anticipating lower values on account of the comparative lull in the trade since the first of the year. With the exception of a few Southern operators, furnacemen are firmly maintaining values and are in a position to do so with well filled order books running through

the first quarter, and in a few instances almost through the first half of this year. The concessions on Southern Iron made in this market in the past few weeks were limited to odd lots and off grades and did not include any of the standard brands. Outside of a 2000-ton lot of No. 2 Southern Iron for February, March and April delivery on the basis of \$14.50 Birmingham, sales during the week have been limited almost entirely to small lots for immediate shipment. Northern Iron continues to be maintained on a basis of more than \$1 a ton above Southern and there is no indication of a reduction of this spread in the immediate future. High Silicon Irons averaging from 4 to 5 per cent. are being freely offered, the available supply at Western furnaces being considerably above the normal. Founders, on the other hand, are not buying heavily, and comparatively low prices are ruling. We quote at Chicago as follows:

Lake Superior Charcoal.....	\$20.50 to \$21.50
Northern Coke, Foundry, No. 1.....	19.75 to 20.00
Northern Coke, Foundry, No. 2.....	19.25 to 19.50
Northern Coke, Foundry, No. 3.....	18.75 to 19.00
Northern Scotch, No. 1.....	20.00 to 20.50
Ohio Strong Softeners, No. 1.....	20.05 to 20.30
Ohio Strong Softeners, No. 2.....	19.55 to 19.80
Southern Coke, No. 1.....	18.40 to 18.65
Southern Coke, No. 2.....	17.90 to 18.15
Southern Coke, No. 3.....	17.40 to 17.65
Southern Coke, No. 4.....	16.90 to 17.15
Southern Coke, No. 1 Soft.....	18.40 to 18.65
Southern Coke, No. 2 Soft.....	17.90 to 18.15
Southern Gray Forge and Mottled.....	16.40 to 16.65
Malleable Bessemer.....	19.25 to 19.50
Standard Bessemer.....	19.55 to 19.80
Jackson Co. and Kentucky Silvery, 6%.....	21.30
Jackson Co. and Kentucky Silvery, 8%.....	22.30
Jackson Co. and Kentucky Silvery, 10%.....	24.30

Metals.—Lower prices are prevailing on all Metals with the exception of Tin. The latter is strong, and a rise to 40c. is expected. Buying is limited to small lots of Copper, Lead and Spelter. We quote: Casting Copper, 18½c. to 19¼c.; Lake, 19¼c. to 19¾c.; Pig Tin, car lots, 38¼c. to 38¾c.; small lots, 39c. to 40c.; Spelter, prompt delivery, 6¾c. to 7c. for car lots; Lead, Desilverized, 6.25c. to 6.35c.; Corroding, 6.80c. to 7c. for 50-ton lots; on car lots, 2¼c. per 100 lbs. higher; Sheet Zinc is \$8 list, f.o.b. LaSalle in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 16¼c.; Heavy Copper, 16¼c.; Copper Bottoms, 15¼c.; Copper Clips, 16¼c.; Red Brass, 14¼c.; Red Brass Borings, 13¼c.; Yellow Brass, Heavy, 11¼c.; Yellow Brass Borings, 10¼c.; Light Brass, 8¼c.; Lead Pipe, 5¼c.; Tea Lead, 4¼c.; Zinc, 5c.; Pewter, No. 1, 24c.; Tin Foil, 29c.; Block Tin Pipe, 27¼c.

(By Mail.)

Rods and Billets.—The American Steel & Wire Company this week announced its withdrawal from the market as a seller of Rods, its entire tonnage for the open market having been disposed of for some time in the future. Forging Billets in small lots continue to be held at \$35 without the usual extras and Rolling Billets are quoted at \$32.

Rails and Track Supplies.—The Illinois Steel Company has booked another order for 10,000 tons of Standard Section Rails for this year's delivery and is rapidly filling up its unsold tonnage. Specifications on Light Rails, Angle Bars, Track Bolts and Spikes continue greatly in excess of mill shipments and on Track Supplies the Illinois Steel Company, the largest producer in the West, is temporarily out of the market. We quote as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.10c.; Track Bolts, 2.55c. to 2.60c., base, Square Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, \$27 to \$28; 25 lb., \$28 to \$29; 20 lb., \$29 to \$30; 16 lb., \$30 to \$31; 12 lb., \$31 to \$32, and lighter sections down to 8 lb., \$38 to \$40, f.o.b. mill. Standard Sections are unchanged at \$28, f.o.b. mill, full freight to destination.

Plates.—Specifications are much lighter than they have been for some time and Eastern mills are making deliveries on new business in from two weeks to 30 days. While the Illinois Steel Company has its entire tonnage practically taken up through the first half of the year, this does not hold good with the Eastern mills. Plate producing capacity on account of the new mills erected in the past year is now more than equal to the consumption, and while prices are being well maintained consumers experience no difficulty in having their orders filled promptly. That the Plate manufacturers, however, have the situation well in hand is indicated by the informal action taken last week which places Plates for Pacific Coast delivery on the Pittsburgh basis and means practically an advance of \$4 a ton. The delivered price to common points is now 2.35c. instead of 2.15c., the freight from Pittsburgh being 75c. Quotations are unchanged as follows: Tank quality, ¼-inch and heavier, wider than 6¼ and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72

inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange and head quality, 25c. extra.

Structural Material.—The Engineering Bureau of the Department of Public Works of the city of Chicago has submitted specifications requiring an appropriation aggregating about \$2,500,000 for the erection and reconstruction of 12 city bridges requiring upward of 25,000 tons of Steel. Eight of these bridges are to be built and reconstructed this year. No large orders have been taken during the week by Structural fitters, and the new business that is reaching the mills has been comparatively light. Local jobbers continue to quote 2.25c. to 2.75c. on material for prompt delivery, and considerable business is being taken on this basis. On future shipments mill quotations are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86½c.; Angles, 3 to 6 inches, ¼ inch and heavier, 1.86½c.; Angles, larger than 6 inches on one or both legs, 1.96½c.; Beams larger than 15 inches, 1.96½c.; Zees, 3 inches and over, 1.86½c.; Tees, 3 inches and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

Bars.—Lower prices are ruling on Iron Bars this week and 1.80c. is now being openly quoted on carload orders. On the other hand, quotations from store remain unchanged at 2.25c., this price having been reaffirmed by the dealers last week. Steel Bar specifications continue heavy and are still in excess of mill shipments from week to week. We make the following quotations: Iron Bars, 1.80c. to 1.85c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.01½c., extras as per Hoop card; Bands, 1.66½c., as per Steel Card; Soft Steel Angles and Shapes, 1.66½c., half extras. Store prices are as follows: Bar Iron, 2.20c. to 2.25c.; Steel Bars, 1.85c. and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.20c. to 2.25c., full extras.

Sheets.—The mills are not in receipt of very much new business, but specifications are heavy and consumers having contracts on a much lower basis than present quotations are anxiously taking out their entire quota. Quotations are firmly maintained, as follows: Blue Annealed, Nos. 9 and 10, 1.86½c. to 1.91½c.; Nos. 16 and 17, 2.06½c. to 2.11½c.; Box Annealed, Nos. 18 to 20, 2.26½c. to 2.31½c.; No. 27, 2.46½c. to 2.51½c.; No. 28, 2.56½c. to 2.61½c.; Galvanized Sheets, Nos. 10 to 14, 2.61½c.; Nos. 17 to 21, 2.86½c.; Nos. 22 to 24, 3.01½c.; Nos. 25 and 26, 3.21½c.; No. 27, 3.41½c.; No. 28, 3.61½c.; No. 30, 4.11½c. Sheets from store: Blue Annealed, Nos. 10 and 11, 2.10c. to 2.20c.; Nos. 12 and 13, 2.15c. to 2.25c.; Nos. 14 and 15, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Box Annealed, Nos. 18 to 20, 2.50c. to 2.60c.; Nos. 22 to 24, 2.60c. to 2.70c.; No. 26, 2.65c. to 2.75c.; No. 27, 2.70c. to 2.80c.; No. 28, 2.80c. to 2.90c.; No. 30, 3.25c. to 3.35c. Galvanized from store: Nos. 10 to 20, 3c. to 3.10c.; Nos. 22 to 24, 3.15c. to 3.25c.; No. 26, 3.35c. to 3.45c.; No. 27, 3.55c. to 3.65c.; No. 28, 3.75c. to 3.85c.; No. 30, 4.85c. to 5.05c.

Merchant Pipe.—Notwithstanding the high prices prevailing on Iron Skelp and the inability of the mills to secure a regular supply some shading is reported on Iron Pipe in this market. Skelp 6 inches and larger in width is extremely difficult to secure at the present time and some of the mills are not quoting generally on Iron Pipe for this reason. The following official discounts represent the market's minimum: Black Steel Pipe, 78.35 per cent. on the base sizes ¾ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ¾ to 6 inches.

Boiler Tubes.—Local distributors have placed large contracts with the leading interest for future requirements and the local market is in fairly good condition notwithstanding the slight shading that is limited almost entirely to a few jobbers. Official discounts, base sizes, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35; 2½-inch and smaller and lengths over 18 feet, and 2¾-inch and lengths over 22 feet, 10 per cent. extra. Store prices are unchanged as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches.....	40	35	42½
1½ to 2¼ inches.....	50	35	35
2½ inches.....	52½	35	30
2¾ to 5 inches.....	60	47½	42½
6 inches and larger.....	50	35	..

Cast Iron Pipe.—The United States Cast Iron Pipe & Foundry Company was awarded the contract for 6500 tons of Pipe by the city of St. Louis last week in the face of considerable competition. A private consumer at Indianapolis also purchased 1800 tons. Bids for the requirements of the city of St. Paul amounting to 800 tons will be readvertised for, although the contract was practically closed 10 days ago. Quotations remain unchanged as follows: Water Pipe, 4-inch, \$31; 6, 8, 10 and 12 inch, \$30; over 12-inch, \$29, with \$1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

Merchant Steel.—Little new business is reaching the mills, and consumers are principally concerned in securing deliveries on material for which they contracted months

ago. Prices are firmly maintained as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to $1\frac{1}{2} \times \frac{1}{2}$ inch, 1.65c., and Iron Finish, $1\frac{1}{2} \times \frac{1}{2}$ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: $\frac{3}{4}$, $\frac{7}{8}$ and 1 inch, 2c., and $1\frac{1}{2}$ inch and larger, 1.90c., Pittsburgh; Smooth Finished Machinery Steel, 1.91 $\frac{1}{2}$ c.; Flat Sleigh Shoe, 1.71 $\frac{1}{2}$ c.; Concave and Convex Sleigh Shoe, 1.86 $\frac{1}{2}$ c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21 $\frac{1}{2}$ c.; Railway Spring, 1.86 $\frac{1}{2}$ c.; Crucible Tool Steel, 6 $\frac{1}{2}$ c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount on car lots and 45 per cent. in less than car lots, in base territory.

Coke.—Sales of Connellsville Foundry Coke were made on the basis of \$2.75 at the ovens last week, and several consignments were sold which netted the producer only \$3. The maximum quotation on spot Coke is \$5.65, Chicago, and while producers are not anxious to close contracts for future shipment on this basis the foundries are buying heavily at present prices and are laying in heavy stocks. By-product Coke on contract running through the first half of the year is quoted at \$6.15, Chicago.

Old Material.—Wrought Scrap slumped sharply during the week and the entire list, with a few exceptions, is weaker. Railroad offerings are growing heavier, indicating that railroad managers anticipate still lower prices and that they desire to take advantage of the prices now ruling. The Chicago, Burlington & Quincy issued a list this week, which will be closed January 24, covering 4000 tons of miscellaneous material and which includes over 1000 tons of Short Length Rails. The Illinois Central Railroad, on the other hand, is holding its enormous tonnage and has offered no list for some time. Steel Car Axles have advanced sharply and are being used to some extent in the place of Rolling Billets. The open weather has been unusually favorable to the rapid movement of material and some mills are actually congested with material, so rapidly has it been shipped by the dealers. Relaying Rails have advanced slightly and are expected to rule high this year on account of the congestion at the Rail mills. The range of prices paid by large consumers to producers and dealers, car lots, f.o.b. Chicago, is as follows:

Old Iron Rails.....	\$23.00 to \$23.50
Old Steel Rails, 4 feet and over.....	16.50 to 17.00
Old Steel Rails, less than 4 feet.....	16.50 to 17.00
Heavy Relaying Rails, subject to inspection.....	27.00 to 27.50
Old Car Wheels.....	19.00 to 19.50
Heavy Melting Steel Scrap.....	15.00 to 15.25
Frogs, Switches and Guards.....	15.00 to 15.50
Mixed Steel.....	13.00 to 13.25

The following quotations are per net ton:

Iron Fish Plates.....	\$18.50 to \$19.00
Iron Car Axles.....	23.50 to 24.00
Steel Car Axles.....	21.00 to 21.50
No. 1 Railroad Wrought.....	17.00 to 17.50
No. 2 Railroad Wrought.....	16.00 to 16.50
Locomotive Tires, smooth.....	14.25 to 14.50
Railway Springs.....	14.50 to 15.00
No. 1 Dealers' Forge.....	13.00 to 13.50
Wrought Pipes and Flues.....	12.00 to 12.50
Mixed Bushing.....	12.00 to 12.50
Iron Axle Turnings.....	12.00 to 12.50
Soft Steel Axle Turnings.....	12.00 to 12.50
Machine Shop Turnings.....	12.00 to 12.50
Cast Borings.....	10.25 to 10.75
Mixed Borings, &c.....	10.00 to 10.50
No. 1 Mill.....	9.00 to 9.50
Country Sheet.....	8.75 to 9.00
No. 1 Bolers, cut to Sheets and Rings.....	12.00 to 12.50
No. 1 Cast Scrap.....	14.50 to 15.00
Stove Plate and Light Cast Scrap.....	12.00 to 12.50
Railroad Malleable.....	15.00 to 15.25
Agricultural Malleable.....	14.00 to 14.50

H. A. Forsyth, who for some years has been engaged in the sale of Pig Iron in the Chicago territory, has been appointed by the Tennessee Coal, Iron & Railroad Company to assist A. H. Carpenter, the new manager of sales at the Chicago office.

Pittsburgh.

PARK BUILDING, January 24, 1906.—(By Telegraph.)

Pig Iron.—We note a fair amount of inquiry for Pig Iron, and the market seems to be very strong. The purchase of 100,000 tons of Bessemer Iron by the United States Steel Corporation for first and second quarter delivery has pretty well taken up the surplus Iron for the first six months, and should it buy about 50,000 tons additional for the second quarter, for which it has been negotiating, that would probably bring about higher prices. The absolute minimum of the market on Bessemer Iron is \$17.50, Valley furnace, while sales of small lots for prompt delivery have been made at \$17.75, Valley furnace. We note a good deal of inquiry for Malleable Bessemer Iron, on which sellers are quoting about \$17.50 at furnace. Basic Iron is fairly strong, and is held at about \$17.25, Valley furnace. There is not much inquiry for Foundry Iron, as the large con-

suming trade is pretty well covered. We quote Northern brands of No. 2 Foundry at \$17.25, Valley furnace, but on a firm offer some sellers might shade this price. Forge Iron is very firm, and the demand is fairly active. We quote Northern makes of Forge Iron at \$16.50, Valley furnace, or \$17.35, Pittsburgh. There have been one or two resales of Forge Iron at a slightly lower price than this quotation.

Steel.—The mills do not seem to be catching up to any extent on delayed deliveries of Billets and Sheet and Tin Bars and the Sheet and Tin Plate mills are having more or less trouble in getting deliveries. Bessemer and Open Hearth Billets are very strong, and are now held at about \$27, Pittsburgh. Sheet and Tin Bars in random lengths are quoted at \$27.50 to \$28, maker's mill.

(By Mail.)

Negotiations which have been on for some days for the purchase by the United States Steel Corporation of additional tonnage of Bessemer Iron for second quarter delivery have not yet gone through, but it is fully expected that it will buy a large block within a short time. The market is firm. Bessemer Iron is held at \$17.50 to \$17.75, Valley furnace, some small lots for prompt delivery having been sold at the latter price. Basic Iron is held at \$17.25, Valley furnace. Foundry Iron is rather quiet and prices do not seem to be as firm as they were some time ago. No. 2 is held at about \$17.25, Valley furnace, but on a firm offer this price might be shaded. Northern Forge Iron is quite firm at \$16.50, Valley furnace, or \$17.35, Pittsburgh. There is still a great scarcity of both Bessemer and Open Hearth Billets, and prices are very firm on the basis of \$26.50 to \$27, Pittsburgh. New business in Finished Iron and Steel continues fairly large, but the belief is growing among consumers that prices will not be any higher and there is less disposition to contract far ahead. There have been some large orders placed for Line Pipe and the demand for Tin Plate is exceptionally good for the season. Prices on Coke and Scrap are decidedly softer.

Muck Bar.—There has been some inquiry in the last week or ten days, and we note a sale of 1000 tons of domestic Muck Bar made from all Pig Iron at \$32, Pittsburgh. This price is quoted by the leading interest. Eastern Muck Bar is offered at \$30.50 to \$31, Pittsburgh.

Ferromanganese.—We note the sale of a very small lot of foreign 80 per cent. for prompt shipment at \$175 a ton, Pittsburgh. The market for forward delivery is easier, and for February and March shipment 80 per cent. is quoted at \$125 to \$130, Pittsburgh.

Steel Rails.—Orders for Rails for 1906 delivery continue to be received by the mills in large volume, and a number of roads that placed contracts some time ago have again come into the market with additional tonnage. We are advised that a total of 75,000 tons has been placed since our last report. The demand for Light Rails is quite active, and prices are firm as follows: 8-lb., \$36; 10-lb., \$32; 12-lb., \$30; 16-lb., \$29; 20-lb., \$28.50; 25 to 45 lb., \$27.50 to \$28, maker's mill.

Rods.—We note a continued scarcity of Rods for prompt shipment and prices are very firm. We quote Bessemer and Open Hearth Rods at \$34 to \$34.50, and Chain Rods, \$35, maker's mill.

Skelp.—The new demand for Skelp is fairly large and the mills are filled up with old contracts, on which they are considerably behind in shipments. Prices are firm and we quote: Grooved Steel Skelp, 1.57 $\frac{1}{2}$ c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.70c. to 1.75c., and Sheared Iron Skelp, 1.80c. to 1.85c., Pittsburgh. These prices are for ordinary widths and gauges.

Structural Material.—Some additional large contracts have been placed. The McClintic-Marshall Construction Company has taken 7000 tons for the post office in New York City, to be located in the terminal station of the New York Central Railroad, and also 500 tons for a bridge for the Burlington road. We also note a contract for about 6000 tons of Structural Steel for a 24-story office building to be erected in this city. Details concerning the identity of the builder of this structure and its location have not been given out. Work coming up includes a new Steel bridge across the Monongahela River for the Monongahela Connecting Railroad, which will require a large tonnage. The Structural fabricators are filled up for many months ahead. Deliveries by the mills are still unsatisfactory, especially on Open Hearth stock. We quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x $\frac{1}{4}$ inch thick up to 6 x 6 inches, 1.70c.; 8 x 8 and 7 x 3 $\frac{1}{2}$ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels

and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—A conference of manufacturers was held in New York on Tuesday, January 16, at which it was decided to increase the extra on Marine Steel over Tank Plate from two-tenths to four-tenths of a cent. It was also decided to increase the Pacific Coast, base, from 1.40c., f.o.b. Pittsburgh, to 1.60c. This latter change was made for the reason that the foreign Plate mills are pretty well filled up with tonnage, and there is not much danger of foreign Plates going to Pacific Coast points. New business in Plates continues fairly heavy, while specifications on contracts are coming in very liberally, and the mills have all the work on their books that they can turn out for some months to come. We have changed our list of prices to conform to the changes made at the meeting last week, and now quote as follows: Tank Plates, $\frac{1}{4}$ inch thick, $6\frac{1}{4}$ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than $\frac{1}{4}$ -inch to and including 3-16-	
inch Plates on thin edge.....	\$0.10
Gauges No. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)....	.10
Complete Circles.....	.20
Boller and Flange Steel Plates.....	.10
Marine, "A. B. M. A.".....	.40
Still Bottom Steel.....	.30
Locomotive Fire Box Steel.....	.50
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of $\frac{1}{2}$ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Sheets.—New business in Sheets is fairly heavy, while specifications on contracts placed before the recent advance in prices was made are coming forward very freely. The mills still complain of a shortage in supply of Sheet Bars on which the makers are not giving prompt deliveries. Prices are quite firm and we quote: Black Sheets, Box Annealed, one pass through cold rolls, Nos. 10 to 12 gauge, 2c.; Nos. 13 and 14, 2.05c.; Nos. 15 and 16, 2.10c.; Nos. 17 to 21, 2.15c.; Nos. 22 to 24, 2.20c.; Nos. 25 and 26, 2.25c.; No. 27, 2.30c.; No. 28, 2.40c.; No. 29, 2.55c., and No. 30, 2.65c. Galvanized Sheets: Nos. 10 and 11, 2.35c.; Nos. 12 to 24, 2.45c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.70c.; Nos. 22 to 24, 2.85c.; Nos. 25 and 26, 3.05c.; No. 27, 3.25c.; No. 28, 3.45c.; No. 29, 3.70c., and No. 30, 3.95c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.65 per square and Galvanized Roofing Sheets, No. 28 gauge, at \$3 per square for $2\frac{1}{2}$ -inch corrugations. Jobbers charge the usual advances over these prices for small lots.

Bars.—Prices on Iron Bars are weaker and the leading interest has withdrawn its quotation of 2c., Youngstown, on Iron Bars, which has been in force for some time. New tonnage in Iron and Steel Bars is only fairly large, consumers not being disposed to contract very far ahead, as they believe prices will not be any higher. Specifications on contracts are coming in quite freely and shipments from the mills are heavy. We quote Steel Bars at 1.50c. base, half extras, for carloads and larger lots. We quote Iron Bars at 1.85c. to 1.90c., Pittsburgh.

Hoops and Bands.—Consumers are specifying very freely on contracts and a fair amount of new tonnage is being placed. We quote Steel Hoops at 1.85c. and Bands to be used for cooperage purposes at 1.85c., the latter carrying full Hoop and Band extras. Bands for other than cooperage purposes are 1.50c., base, half extras, as per Standard Steel card. Above prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery.

Tin Plate.—The demand continues heavy. The leading mills now have a large tonnage on their books for delivery prior to July 1. The American Sheet & Tin Plate Company has started eight mills in the Star works in this city and ten of the 20 hot mills in the South Sharon works. It is now operating about 80 per cent. of its Tin Plate capacity. Prices continue firm and there is still a scarcity of Tin Bars, which is interfering to some extent with operations of the mills. We quote \$3.50 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days. Some mills allow a rebate of .5c. a box on the above price to the large trade.

Merchant Steel.—New tonnage is very light, but speci-

fications on contracts are coming in very freely and shipments from the mills are heavy. Prices are firm but unchanged and we quote: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to $1\frac{1}{2}$ x $\frac{1}{2}$ inch, 1.65c., and Iron Finish, $1\frac{1}{2}$ x $\frac{1}{2}$ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: $\frac{3}{4}$, $\frac{1}{2}$ and 1 inch, 2c., and $1\frac{1}{2}$ -inch and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.65c. to 1.70c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. Demand for Shafting is heavy.

Railroad Spikes.—The demand continues heavy and prices are very firm. We quote \$2 to \$2.10 per 100 lbs., f.o.b. makers' mill.

Spelter.—The demand is very dull, consumers holding off placing orders in the belief that present high prices cannot be maintained. We quote Prime Western grades at 6.40c. to 6.45c., St. Louis, equal to 6.52 $\frac{1}{2}$ c. and 6.57 $\frac{1}{2}$ c., Pittsburgh.

Merchant Pipe.—Some large contracts for Line Pipe have been placed since our last report. The National Tube Company has taken a contract for 60 miles, and Spang, Chalfant & Co., Incorporated, 30 miles of 18-inch for the Ohio Fuel Company, for the extension of its lines to Norwood, near Cincinnati. The National Tube Company has also taken 50 miles of 8-inch for the Union Oil Company of California, for its isthmian oil line in that State. The general demand for Merchant Pipe continues heavy, and the mills are comfortably filled with work. Prices on Pipe are lower than on any of the other Steel commodities, the extreme discount of Merchant sizes to the large trade being 81 per cent. off. Official discounts are as follows:

Merchant Pipe.

	Jobbers, carloads.		Consumers, carloads.	
	Steel.	Iron.	Steel.	Iron.
Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.
$\frac{1}{2}$ and $\frac{3}{4}$ inch.....	72	56	69 $\frac{1}{2}$	53 $\frac{1}{2}$
$\frac{1}{2}$ inch.....	74	66	73 $\frac{1}{2}$	61 $\frac{1}{2}$
$\frac{3}{4}$ inch.....	76	64	73 $\frac{1}{2}$	61 $\frac{1}{2}$
$\frac{1}{2}$ to 6 inches.....	80	60	78	68
7 to 12 inches.....	75	60	73	57 $\frac{1}{2}$
Extra strong, plain ends:				
$\frac{1}{2}$ to $\frac{3}{4}$ inch.....	65	53	62 $\frac{1}{2}$	50 $\frac{1}{2}$
$\frac{1}{2}$ to 4 inches.....	72	60	69 $\frac{1}{2}$	57 $\frac{1}{2}$
$\frac{1}{2}$ to 8 inches.....	68	56	65 $\frac{1}{2}$	53 $\frac{1}{2}$
Double extra strong, plain ends:				
$\frac{1}{2}$ to 8 inches.....	61	50	58 $\frac{1}{2}$	47 $\frac{1}{2}$

Boiler Tubes.—The new business being placed is light, but the mills are fairly well filled on contracts taken some time ago, on which buyers are specifying quite freely. There is still some unevenness in prices, the discounts named below being occasionally shaded. These discounts are as follow:

Boiler Tubes.

	Iron.	Steel.
1 to $1\frac{1}{2}$ inches.....	41	46
$1\frac{1}{2}$ to $2\frac{1}{4}$ inches.....	41	58
$2\frac{1}{4}$ inches.....	46	60
$2\frac{1}{2}$ to 5 inches.....	53	66
6 to 13 inches.....	41	58

Iron and Steel Scrap.—Prices on all kinds of Scrap are somewhat softer and there is more disposition on the part of dealers to name lower figures to effect sales. Dealers quote about as follows: Heavy Melting Scrap, \$17 to \$17.25; No. 1 Wrought Scrap, \$19.25 to \$19.50; Cast Iron Borings, \$10.50 to \$10.75; Bundled Sheet Scrap, \$15 to \$15.25; Old Steel Rails, short pieces, \$17.25 to \$17.50; long pieces, which are in active demand, are held at \$18 to \$18.50; Machinery Cast Scrap is \$15.25 to \$15.50; Cast Steel Scrap, \$17.25; Old Iron Axles, \$26.50 to \$27; Old Iron Rails, \$24 to \$24.50; Steel Turnings, \$13.50 to \$13.75; Old Car Wheels, \$17.75 to \$18, all in gross tons, f.o.b. Pittsburgh. On a firm offer it is probable the above prices could be shaded 25c. a ton or perhaps more.

Coke.—Prices on both Furnace and Foundry Cokes are weak and lower. This is not due to absence of demand, but entirely to the enormous output of Coke and the full supply of cars being furnished by the railroads. Strictly Connellsville Furnace Coke is offered as low as \$2.50 a ton at oven and Connellsville 72-hour Foundry Coke at \$3.40 a ton at oven or lower. What is known as High Sulphur Furnace Coke, in which the sulphur varies a good deal, is being offered as low as \$2 a ton at oven. The Upper and Lower Connellsville regions made last week nearly 380,000 tons of Coke.

The headquarters of the Republic Iron & Steel Company will be removed from Chicago to Pittsburgh about March 1. Offices have been secured in the Frick Building Annex. A local sales office will be maintained at Chicago of sufficient strength to give the company's Western trade the same careful attention that it received in the past. Charles Hart, manager of the Youngstown works, will also make his headquarters at Pittsburgh.

Philadelphia.

REAL ESTATE TRUST BUILDING, January 22, 1906.

The Iron and Steel markets show surprising strength and activity. It seems impossible to meet the full requirements of consumers, as almost every large concern in the trade is most urgent in its requests for immediate shipments, whether the Iron is due to them or not. Furnaces are turning out a maximum tonnage, and it is hardly likely that they will do much better for quite a while, so that unless consumers modify their demands it may result in a serious shortage some time during the next two or three months. The average of furnaces in this district shows three to four months sold up, with practically not more than two days' output on hand, so that it is evident the skating is on very thin ice. A little more demand or a little less supply would draw the strings very tight, and either contingency is quite in the line of possibility if not of probability. It is no wonder, therefore, that there is grave anxiety in regard to the situation, although it is hoped that the crisis will be passed without any serious disarrangement in values. If production is up to its full limit, however, it is hard to see how higher prices could help matters. The plan of Peter being called upon to help Paul is sometimes resorted to, but if there is no increase in the supply of Iron, methods of that kind give no relief whatever. This, however, will probably be avoided, but when it is claimed that the mill or the foundry, as the case may be, must stop work if shipments are not made inside of 24 hours, makers naturally do all they can to help them out, even if they have to divert shipments once in a while. This is mentioned as an evidence of the prevailing scarcity, and in doing so the situation is in no way overstated. The prospect of an early increase in production is not very bright at the moment, although it is still hoped that some relief will be obtained during the early spring months. Sales continue to be on quite a large scale, notwithstanding the heavy purchases made during the past three or four weeks, and the wonder is where all the Iron goes. It is not any particular grade that is wanted to the exclusion of others, but everything is taken, even if it costs a little more money. The price movement is not important but it gains a little every week, without the slightest sign of a reaction, so that for the present the advantage is all on the side of the seller. Finished products are in good demand, and mills are uniformly busy. As a matter of fact, there never was a time when there was such uniform activity as there is at present, and not only that, but prices have been steady all the way through, and have every appearance of continuing so indefinitely. It seems a good deal like optimism to repeat these things week after week, but to be in accord with existing conditions there is no alternative but to be optimistic.

Pig Iron.—As we have already stated, the demand for Pig Iron shows no signs of abatement. Consumption is the impelling force, so that it is no longer a matter of expediency, but a case of must. Purchases are made to cover a given period, but buyers find they are using more Iron than they figured on, and are therefore in the market again sooner than they expected. This keeps everything keyed up to the highest pitch, and leaves no room for considering the possibility of a reaction. The unusually open winter is probably partly responsible for the heavy consumption, as there has been no time yet when outdoor work could not be carried on without interruption. This makes a wonderful difference, and if such conditions continue through the entire winter it is thought that there may be a considerable shortage of both Pig Iron and Finished Material. In the meanwhile sellers are inclined to hope that buyers will let them alone for a while, as their books are as full as they ought to be, having due regard to deliveries. The question of prices is not a debatable matter, buyers being quite willing to pay the asking figures, while sellers have no desire to force a further advance, the object being to hold the trade on as easy terms as may be equitable to both parties. Such conditions as these probably never existed before, but there is some reason to believe that they will not be as rare as they have been in the past, the community of interest having proved to be more real than has been thought possible heretofore. In regard to prices there is not much change, but such as has occurred is in the direction of higher figures. There is more Iron sold at the outside and less at the inside prices, which may render a complete revision of quotations necessary in our next issue, but in the meanwhile the following are a fair average for Philadelphia and nearby deliveries:

No. 1 X Foundry.....	\$19.00 to \$19.50
No. 2 X Foundry.....	18.50 to 18.75
No. 2 Plain.....	17.75 to 18.25
No. 2 Southern.....	18.75 to 19.00
Standard Gray Forge.....	17.00 to 17.50
Basic.....	17.90 to 18.10
Low Phosphorus.....	24.50 to 25.50
Bessemer.....	19.50 to 19.75
Malleable Iron.....	19.00 to 19.25

Steel Alloys.—Receipts from abroad are somewhat larger, but they have done very little toward relieving the

scarcity. Prices are almost anything that holders care to ask for spot deliveries, so that quotations cannot be regarded as anything more than a guess. There is a little stiffening on shipments for the last half of the year, the range being something near to the following quotations:

Silico Spiegel, 10 and 18 per cent.....	\$44.00 to \$55.00
Ferrosilicon, 50 per cent.....	100.00 to 110.00
Spiegeleisen, 20 per cent.....	42.00 to 46.00
Ferromanganese, 80 per cent.....	95.00 to 125.00

Muck Bars.—There is very little demand at present, although some business has been done at a little over \$30, delivered. All Pig Bars may be quoted firm at \$29.50 to \$29.75, maker's mill, and Bars made from Scrap at about \$29, seller's mill.

Steel.—There is a fairly good demand at about last week's prices, say \$29 to 30, according to quantity and date for delivery. Forging Steel commands the usual advance of \$5 to \$8 per ton and is in good demand.

Plates.—The situation is in all respects unchanged and apparently is not likely to change for an indefinite period. Everything is being run to full capacity, with orders on the books to last well on toward midsummer. There is also quite a heavy day to day demand, which makes it difficult to make all deliveries as they are required. Prices are firm, as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel.....	1.73½	1.78½
Flange or Boiler Steel.....	1.83½	1.88½
Marine, A. B. M. A. and Commercial		
Fire Box Steel.....	2.13½	2.18½
Still Bottom Steel.....	2.03½	2.08½
Locomotive Fire Box Steel.....	2.23½	2.28½
The above are base prices for ¼-inch and heavier. The following extras apply: Per 100 pounds extra.		
3-16-inch thick.....	\$0.10	
Nos. 7 and 8, B. W. G.....	.15	
No. 9, B. W. G.....	.25	
Plates over 100 to 110 inches.....	.05	
Plates over 110 to 115 inches.....	.10	
Plates over 115 to 120 inches.....	.15	
Plates over 120 to 125 inches.....	.25	
Plates over 125 to 130 inches.....	.50	
Plates over 130 inches.....	1.00	

Bars.—The Bar trade does not appear to be very active as regards new business, although most of the mills are running full. Specifications are coming in satisfactorily, and by the time these are through it looks as though there would be plenty of business, as consumption is very heavy. Prices remain at 1.83½c. for best Refined Iron, and Steel Bars nominally 1.63½c., but long delays in deliveries cannot be avoided in the last named.

Structural Material.—There is little to be said beyond repeating the old story of difficulties in getting reasonably prompt deliveries. The mills are far behind with their orders and prospects for catching up are no better than they have been for months past. Prices are unchanged, namely: Beams, Channels and Angles, 1.83½c. to 2c. delivered.

Sheets.—A good demand is reported at firm quotations, as follows: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

Old Material.—The demand for Old Material is very poor, and to effect sales lower prices would have to be accepted. Buyers have either reduced their bids or have withdrawn from the market entirely, so that exact prices cannot be given at this time, although the following are supposed to be about market prices, delivered in buyers' yards:

Scrap Steel Rails.....	\$17.75 to \$18.00
No. 1 Steel Scrap.....	17.00 to 17.50
Low Phosphorus Scrap.....	24.00 to 24.50
Old Steel Axles.....	20.00 to 21.00
Old Iron Axles.....	27.50 to 28.00
Old Iron Rails.....	24.50 to 25.00
Old Car Wheels.....	18.75 to 19.00
Choice Scrap, R. R. No. 1 Wrought.....	21.00 to 22.00
No. 1 Yard Scrap.....	18.50 to 19.00
Long and Short.....	17.75 to 18.25
Machinery Scrap.....	16.00 to 16.50
Wrought Iron Pipe.....	16.00 to 16.50
No. 1 Forge Fire Scrap.....	16.00 to 16.50
No. 2 Light Ordinary.....	12.50 to 13.00
Wrought Turnings.....	14.50 to 15.00
Axle Turnings, Choice Heavy.....	15.50 to 16.00
Cast Borings.....	11.00 to 11.25
Stove Plates.....	13.25 to 13.75
Grate Bars.....	12.75 to 13.25

The Bristol Iron & Steel Company, at Bristol, Pa., has started up its Bar mill, and is offering its output through L. & R. Wister Company, Philadelphia, as its sales agents.

The Hyatt Roller Bearing Company, Harrison, N. J., held its fourth annual collation and vaudeville entertainment on Wednesday evening, January 17, in the grand ballroom of the Waldorf-Astoria, New York. The evening was given up to a creditable entertainment and an excellent repast. Some informal remarks were made by the officers of the company and their guests.

Birmingham.

BIRMINGHAM, ALA., January 22, 1906.

Pig Iron.—The week's business hardly totals up as much as last, but the buying is principally for immediate shipment, indicating that more Iron is needed for first quarter's consumption than was originally thought. This early buying to fill in shortage for the first quarter is also no doubt due largely to a desire to take advantage of present freight rates. Many consumers are not only endeavoring to get their first quarter's Iron delivered before March 1, after which date the rate of freight from Southern furnaces will advance 25c. per ton, but are asking for shipments against second quarter's contracts as well. If cars can be secured, and the railroads promise they will make strenuous efforts to furnish them, very little Iron will remain on the furnace yards in this district after March 1. The market continues strong at \$14.50 on a No. 2 Foundry basis. A few inquiries are coming in for third quarter delivery, but no orders have been reported, as buyers are inclined to think present prices should be shaded somewhat, but the operators are not yet willing to concede this point.

Cast Iron Pipe.—The Pipe industry was never in a more flourishing condition than at present. All the shops in the district are running at their full capacity and are turning down orders almost daily. It is not so much a question of price as delivery just now, the foundries being booked for months ahead on certain sizes. Following are about the prevailing prices on Water Pipe per gross ton:

4 to 6 inch.....	\$27.00
8 to 10 inch.....	26.00
12 to 20 inch.....	25.00
24 to 48 inch.....	24.00

Gas Pipe, \$1 extra.

Old Material.—A slight reduction has been noted this week on certain grades. The dealers, however, are not disposed to make any great concessions to secure business. They have good stocks, but prefer to hold them until consumers' yards are cleared and they are more eager to buy than at present. Quotations are approximately as follows per gross ton, f.o.b. cars here:

Old Iron Rails.....	\$21.50 to \$22.00
No. 1 Railroad Wrought.....	19.00 to 19.50
No. 2 Railroad Wrought.....	18.00 to 18.50
No. 1 Country Wrought.....	17.00 to 17.50
No. 2 Country Wrought.....	16.00 to 16.50
Wrought Pipe and Flues.....	14.00 to 14.50
Mixed Steel.....	13.00 to 13.50
No. 1 Machinery Cast.....	12.00 to 12.50
Stove Plates and Light Cast.....	10.50 to 11.00

It is understood that there are several engineers in the Birmingham district making a physical report on some of the Iron, Coal and Steel properties here, and the chances are that a merger of the Sloss, the Alabama Consolidated and the Schuler interests at Gadsden and Ensley will be brought about. It is said that some of the leading Steel men in the country are behind the movement, and it is a known fact that they have acquired very large interests in both the Sloss and Alabama Consolidated properties. The trade with the Schuler interests is probably yet to be made. It may be that eventually all these interests will be amalgamated with the Tennessee-Republic combination.

Cincinnati.

FIFTH AND MAIN STS., January 24, 1906.—(By Telegraph.)

Pig Iron.—The week has not been very prolific in the way of new business. While the schedule of prices quoted last week is still effective, there is a feeling that the general tone of the market is possibly a shade below what it was at that time. It then looked as though the available tonnage remaining on a \$14, Birmingham, basis, was very limited indeed, while to-day the reverse seems to be true and a larger tonnage is being sold at \$14 than at \$14.50. Gray Forge, No. 4 Foundry and Mottled are apparently in fair supply and weak. Most of the furnaces are anxious for business of all grades at established prices, but on the lower grades they are said to be willing to make very decided concessions. It begins to look as though the majority of consumers were amply provided for over the first quarter and possibly into the first half, and what Iron is being bought is more in the nature of preparing for emergencies that may arise. While the Foundry grades are quiet the demand for Steel making Irons is very active, and a number of heavy sales have been made. Northern Irons are fairly active and appear to be holding firm at established quotations. The general Foundry trade, viewed locally, is possibly a little better than it was a month or two since, and several foundries have all the work they can do. We learn of an inquiry for 600 tons of Malleable from a large melter in northern Ohio, and a sale of 1000 tons of Southern No. 2 Soft and Nos. 3 and 4 Foundry to a buyer in Michigan, calling for first quarter delivery, that went at \$14, Birmingham; also 2500 tons of Basic for the same point. The leading Pipe interest is reported to have secured a very large tonnage during the week, but the exact amount is withheld. An independent consumer in the Central West bought 5000

tons of Valley Bessemer for January and February delivery. Freight rates from Hanging Rock district to Cincinnati are \$1.15, and from Birmingham \$2.75. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$17.25 to \$17.75
Southern Coke, No. 2.....	16.75 to 17.25
Southern Coke, No. 3.....	16.25 to 16.75
Southern Coke, No. 4.....	15.75 to 16.25
Southern Coke, No. 1 Soft.....	17.25 to 17.75
Southern Coke, No. 2 Soft.....	16.75 to 17.25
Southern Coke, Gray Forge.....	15.50 to 15.75
Southern Coke, Mottled.....	15.25 to 15.75
Ohio Silvery, No. 1 (8% Silicon).....	21.15 to 21.65
Lake Superior Coke, No. 1.....	19.15 to 19.65
Lake Superior Coke, No. 2.....	18.65 to 19.15
Lake Superior Coke, No. 3.....	18.15 to 18.65

Car Wheel Irons.

Standard Southern Car Wheel.....	\$22.25 to \$22.75
Lake Superior Car Wheel.....	21.00 to 21.50

Coke.—The Coke situation is easier. There is apparently little doing. The weather has been such that shipments have been coming forward without delay and consumers have been well supplied. We quote the best grades of Foundry from the Connellsville and Virginia regions from \$3 to \$3.50, f.o.b. ovens.

Finished Iron and Steel.—Trade continues active, with weather conditions favorable for uninterrupted work along Structural lines. Contracts running far into the year have been made and the mills are crowded with work. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.65c., with half extras; the same, in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in small lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

Old Material.—The Scrap Iron market is being well maintained and a fair degree of activity prevails. The month, however, has scarcely been up to expectations, but it is hoped a change for the better will soon develop. We quote dealers' prices, f.o.b. Cincinnati: No. 1 Railroad Wrought Scrap, \$17 to \$17.50 per net ton; No. 1 Cast Scrap, \$14 to \$14.50 per net ton; Iron Rails, \$20 to \$21 per gross ton; Steel Rails, rolling mill lengths, \$15 to \$15.50 per gross ton; Relaying Rails, 56-lb. and upward, \$24.50 to \$25 per gross ton; Iron Axles, \$22.50 to \$23 per net ton; Car Wheels, \$16.50 to \$17 per gross ton; Heavy Melting Scrap, \$15 to \$15.50 per gross ton; Low Phosphorus Scrap, \$18.50 to \$19 per gross ton.

J. Clare Miller, now in charge of sales of the Columbus Iron & Steel Company, and E. C. Humphreys, at present employed as sales agent for the United States Cast Iron Pipe & Foundry Company at Chicago, will on February 1 take service with the Domhoff & Joyce Company of this city in the sales department.

Cleveland.

CLEVELAND, OHIO, January 23, 1906.

Iron Ore.—The vessel interests believe there will be no labor difficulties at the opening of the season of navigation, but this view is not altogether borne out by statements emanating from headquarters of the masters and pilots and the longshoremen. The latter are beginning to insist that the ore unloading machines ought to employ more labor. While this uncertainty exists vessel interests are not committing themselves further for the coming season. Some Ore is yet on the market to be covered by season contract. The season contract rates are still 75c. from the head of the lakes to Lake Erie ports; 70c. from Marquette and 60c. from Escanaba. Base prices are still quoted at \$4.25 for Old Range Bessemer, f.o.b. Lake Erie docks; \$4 for Mesaba Bessemer, \$3.40 for Old Range non-Bessemer, and \$3.40 to \$3.50 for Mesaba non-Bessemer.

Pig Iron.—There has been something of a lull in the foundry trade in the past week. It is evident, however, that shipments on old contracts are steady and that there is a good run of inquiries. The reduction in the price of No. 2 for long time contracts has brought about a reduction in price for spot Iron, which now sells at \$17.50 in the Valleys. The amount of Iron available for prompt shipment has not increased to an appreciable extent. Most of the inquiries are for Iron during the second quarter of the year. A little has been sold into the third quarter, but neither furnaces nor foundries seem disposed to do business that far ahead. The sales of Bessemer to the Steel Corporation have strengthened that market. The present price is generally \$17.50 in the Valleys, which also applies to Basic and Malleable. Some sales of Basic recently have reduced the amount available for prompt shipment. Open weather has weakened the Coke market and 72-hour Coke has been reduced to \$3.25 at the oven, while the best grades of furnace coke are selling at \$2.50 to \$2.60 at the oven. The supply is abundant.

Finished Iron and Steel.—Quieter times are reported in all lines, but conditions are such that it is apparent this is only a temporary lull. Orders have been coming in more slowly than at any time in six months and specifications have not been as heavy as they were up to two weeks ago. But the selling side of the market is not permitting itself to hope that this means any relief from the long strain of the past six months or a year. The let-up which has been earnestly desired is not promised. In Sheets even the larger concerns are not promising shipments inside of ten weeks. This has thrown a good deal of the business to the warehouses. Prices out of stock are strong at 2.10c. for No. 10 Blue Annealed; 2.75c. for No. 28 one pass cold rolled and 3.75c. for No. 28 Galvanized. Orders of 100 to 500 tons of Plates are still frequent on the higher basis recently established by an Eastern mill, indicating that the larger mills in this territory have little to sell for early shipment. The mills are still quoting 1.60c., Pittsburgh, but without being in position to make deliveries before late in the first half. In Structural Steel buying has been comparatively light, but many consumers show a disposition to renew their contracts for this year, especially for delivery through the first six months. The car builders and the ship interests are taking material freely. It is reported this week that one vessel order placed has been cancelled, due to the lack of financial support. This arose from a discussion of the possibility of over-production of lake ships. The demand for Shapes is steady at 1.70c., Pittsburgh. Small Angles bring a premium for quick shipment. Two producers of Billets have re-entered the market after withdrawing from it three or four months ago. They are quoting prices below the recent Cleveland basis. Forging Billets are bringing \$33 to \$34, Cleveland, while Bessemer Billets for rolling are sold at \$25 to \$26, Pittsburgh. It is said that even with the appearance of the above mentioned mills in the market the supply of Steel has not materially increased and it is a question whether the current demand will not more than take up the supply. Bar Steel is strong, and specifications against old contracts are heavy. Bar Iron is steady at 1.75c. to 1.80c. at the mill. All mills report being far behind with their orders.

Old Material.—The demand for Scrap has been slow. The mills are well supplied and since the shipments to dealers have been heavy, efforts have been made to break the price. The dealers have held firm, however, and the result has been an artificially steady but inactive market. The following are dealers' prices to the trade, gross tons: Old Steel Rails, \$16.50 to \$17.50; Old Iron Rails, \$23 to \$23.50; Iron Car Axles, \$16.50 to \$17.50; Heavy Melting Steel, \$17 to \$17.50. Net tons: Cast Borings, \$9.50 to \$10; No. 1 Busheling, \$15 to \$15.50; No. 1 Railroad Wrought, \$17 to \$18; Iron Car Axles, \$22 to \$23; No. 1 Cast, \$15; Stove Plate, \$11; Iron and Steel Turnings and Drillings, \$11 to \$12.

German Iron Market.

BERLIN, January 9, 1906.

The foreign market in general is reported very firm, and the outward movement of goods is still swelling. England is buying, as it has for many months, immense quantities of German half-rolled goods and Ship Plates. The activity in the English shipbuilding trade, and in the German as well, has proved a godsend to the Plate mills. There is also a large sale abroad for Iron and Soft Steel Bars, as well as Sheets. The list price for export at Hamburg for Soft Steel Bars, is 115 marks, Iron Bars 127.50 marks; the latter is also the price for Band Iron and Sheets. Japan has been an active buyer in the Hamburg market for several months, particularly for Rails and railroad material. On the Russian frontier in Upper Silesia there has been a marked increase in the exportation of Pig Iron and other crude products since the economic and political situation in Russian Poland has improved. Australia and South America have recently placed very heavy orders in the Rhenish-Westphalian region for hardware and staple goods; and certain special brands of Crude Iron are in unusually good demand for Canada and other British colonies.

Heavy November Exports.

The export movement for November was the heaviest registered for some years. All exports, reduced to the basis of Pig Iron, amounted to 324,097 metric tons. This was about 5000 tons more than in October, despite the shortness of November; and it beat November, 1904, by not less than 99,400 tons, or above 22 per cent. The total outward movement for 11 months reached 2,985,696 tons, as compared with 2,531,000 tons in the corresponding months of 1904. In other words, 30 per cent. of the production was sent abroad in 1905, as compared with somewhat above 27 per cent. in 1904.

The November make of Pig Iron amounted to 988,000 tons, as against 833,000 tons in November, 1904. The gain was 147,000 tons, or nearly 18 per cent. The November output was about 19,000 tons less than that of October. The

shorter month more than explains the decrease. The daily rate of production was about 440 tons greater than in October.

Trade Features.

The scarcity of Pig Iron is one of the most striking features of the market. The opening of sales for the second quarter of the year a fortnight ago brought a great rush of orders for that period and it is believed that the full capacity of the furnaces to the end of June has already been contracted for. The demand from the home market is so strong that the refusal to take some American orders was recently reported. Furnacemen are still much concerned lest Ore supplies should prove inadequate. The increase in the quantity of Ores mined in the Siegen district has been steady for several months. In September 150,000 tons were taken out and in November 166,000, a gain of about 10½ per cent. The Siegen Ore Association has orders booked for 1,391,000 tons of Ore. As a number of furnaces have recently enlarged their capacity additional Ore supplies are being called for, and where these could not be had at home foreign Ores had to be ordered.

The market for half-rolled material is still in a state of feverish activity. It is reported that many of the rolling mills in the Steel Verband have orders for the first quarter considerably in excess of their allotments. The scarcity in this line of goods in Belgium and England reacts upon the German market strongly. The demand for Structural Steel, like Girders, has, according to some reports, dropped off somewhat in consequence of the diminished activity in the building trades during the winter months; but other reports record the fact that large orders in this specialty for next spring are already coming in, and it is added that the moderate relaxation of the demand for the moment is more than made good by American orders for rolling mill products. A slight falling off, too, in the demand for Steel Rails is mentioned. Large orders from the Prussian Government for Rails for secondary railroads are expected at an early date. An order for 6000 tons of Rails for the street railroads of Montevideo was recently placed in Germany.

The Bar Iron market is gradually showing greater firmness, after this department had been feeling for some months the lack of a strong organization. The price has been raised to 117.50 to 120 marks, according to quantity. These are bottom prices. The mills are mostly sold out till the end of March and many of them have begun to demand higher prices than those just quoted. Mills rolling Bars of Martin Steel refuse orders below 120 marks and some are asking 122.50. Rollers of Iron Bars are extremely busy at prices ranging between 140 and 145 marks. Band Iron is also very active, the mills running to the top of their capacity, and the new prices of 130 marks and higher are enforced without difficulty. Business in Heavy Plates is referred to as somewhat quieter, but orders are on hand for three or four months. The prices are 122.50 to 125 marks for Heavy Plates, 125 to 127.50 marks for Medium Plates and 127.50 to 130 marks for Sheets. Foundries are heavily employed at good prices. Gas Piping is unusually active. The electrical industry is having a large run of home and foreign orders. It was even reported recently that some of the big Berlin concerns were refusing orders in some lines of goods. These companies have just made a 10 per cent. advance in electrical machinery for strong current. Electrical works in Saxony have received large orders from Austria and the Danubian countries, goods to be delivered before March 1, when the new commercial treaties go into effect.

The Coal Trade.

The movement of Coal has grown somewhat heavier since a fortnight ago, the State railroads having succeeded in placing a larger supply of empty cars at the disposal of the mines, though the car famine is not over. The production of Coal in November amounted to 10,720,000 metric tons, which compares with 10,375,000 tons for November, 1904. Needless to say, the outturn would have been considerably greater if it could have been transported from the mines. The Coal Syndicate complains that its production of Coal during the autumn was cut down at least 1,200,000 tons, owing to the shortage of Coal cars. Notwithstanding this fact, together with a reduction of the normal rate of production in January and February, 1905, by at least 4,000,000 tons, the production for the 11 months ended with November showed an increase of 1,040,000 tons, having reached a total of 110,672,000 tons. So great is the pressure for Coal among the great Iron companies of the Essen district that some of them have latterly been importing English Coking Coal, although it costs, laid down at the consuming point, at least 7 marks per ton more than the German article.

No fact illustrates more strikingly the great activity in the Iron industry than the gain in Coke production. The make of Coke touched high water mark in November with 1,511,000 tons. This compares with 1,055,000 tons in November, 1904, the gain being 40 per cent. The increased make for 11 months was 2,634,000 tons.

The Coal mining industry, as well as the Iron Ore mines,

is compelled to cope with a disturbing scarcity of good labor. Agents have been sent out to scour the country for miners, but a sufficient force of men has not been found, although wages have been pretty strongly advanced.

New York.

NEW YORK, January 24, 1906.

Pig Iron.—There is a steady demand and considerable pressure for prompt delivery. One order from a leading railway material plant which has been in the market for some time since has now been increased in quantity to close to 7000 tons, with peremptory requirements as to deliveries. We quote: Northern Iron, No. 1 Foundry, \$19 to \$19.25; No. 2 Foundry, \$18.50 to \$18.75, and No. 2 Plain, \$18.25 to \$18.50. Southern Iron is selling at \$18.50 to \$19 for No. 1 Foundry and \$18 to \$18.50 for No. 2 Foundry.

Steel Rails.—The additional purchases of the Pennsylvania Railroad referred to last week have grown to 50,000 tons, making the total it has placed for this year's delivery more than 230,000 tons. The Atlantic Coast Line has bought 10,000 tons, the Chicago Great Western 5000 tons, and the Chicago & Western Indiana 2000 tons, with miscellaneous sales, including 3000 tons for trolley roads, amounting to 12,000 to 15,000 tons. The demand shows no signs of letting up, and it is estimated that the mills have 2,400,000 to 2,500,000 tons now on their books for 1906.

Structural Material.—The New York Central Post Office building at its New York terminal was let in the past week. About 7500 tons of Steel are called for. The contract was taken by the McClintic-Marshall Construction Company. This company also received an order for 1500 tons from the Pennsylvania lines for elevated work at Chicago and 500 tons for freight work for the Burlington road. Its fabricating works are now filled up for nearly 15 months ahead. A large order for the Lake Shore Railroad, chiefly bridge material, is pending, and it is expected to be placed at an early date. On the whole, the week was rather quiet in Structural lines as compared with some recently preceding weeks. The amount of business ahead in building lines in New York City is unusually large for this season of the year. While the strike has hampered operations to some extent, the very open weather has permitted of doing a much larger amount of work than could have been expected. The buildings in New York City for which plans have taken definite shape will require 50,000 to 60,000 tons of Structural Steel, while much more is in earlier stages. Prominent among projected structures is the one that will go up on Cortlandt street, between Broadway and Church street. Purchases have recently been made of buildings that will be torn down preliminary to this work. The McAdoo tunnel terminals will require a considerable tonnage of Steel. Within the last week plans have been filed with the Buildings Superintendent in New York for the mammoth Astor apartment house at Broadway, West End avenue, Seventy-eighth and Seventy-ninth streets, to cost \$2,000,000. Throughout the country the amount of work ahead on buildings of 8 to 12 stories is phenomenal. Foundation work has been pushed so rapidly owing to the mild winter that Steel is being called for that it was expected would not be needed until March or April, and the mills are getting farther behind, even with the additions to Structural Steel capacity completed in recent months. Firms carrying stocks of Shapes, from which much of the smaller demand has been supplied, are now running out, and are urging the mills for deliveries. It would appear that quite a proportion of the German Shapes bought a few months ago was for resale in small lots from stock, and the indications are that it will be needed. From stock Beams and Channels are selling at 2.45c. to 2.50c. On mill shipments we continue to quote for deliveries ranging from three to five months the following prices at tidewater: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. Beams, 18 to 24 inch, 0.10c. extra; Angles over 6 inches, 0.10c. extra.

Bars.—Conditions continue as previously reported, the mills being still well supplied with work on contracts, while new orders are rather light, as usual at this season. Quotations are continued at 1.84½c. to 1.95c. tidewater for Bar Iron for prompt delivery and 1.64½c. to 2c. tidewater, according to delivery desired, for Steel Bars.

Plates.—Orders for Plates are being received in very fair volume by sales agents for Eastern mills. During the week the price of Marine Plates was advanced \$4 per ton, the extra above Tank Plates having been made 4-10c. instead of 2-10c. The cause of this advance is the increased severity of tests made by the Government on Boiler Plates for marine purposes. The differential to the Pacific Coast has also been discontinued and prices on Plates for that delivery are now quoted at 1.60c. Pittsburgh with full freight added. Some makers still continue to ask a slight premium while others quote as follows at tidewater: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.

Marine Plates, 2.14½c. to 2.24½c.; Fire Box Plates, 2.24½c. to 2.60c., according to specifications.

Cast Iron Pipe.—The manufacturers report business in extremely good shape. They are very much better supplied with work than usual at this time of the year, and small orders continue to be received in good number. Although no large contracts are in sight at the moment, the trade is still expecting lettings to be advertised for heavy quantities of large Pipe both in this city and Philadelphia. Car-load lots are firmly held at \$29.75 per net ton for 6-inch, at tidewater.

Old Material.—The weather has upset the expectations of dealers in Old Material. From week to week winter weather has been anticipated, but it has failed to put in an appearance, and consequently the supply of Scrap has been unusually heavy, consumers are well supplied, and stocks have therefore been so large that prices have latterly been somewhat affected. The trade is nevertheless quite good in spots. The demand for Old Car Wheels and for Malleable Scrap is very strong. Consumers of Steel Scrap are bidding against dealers, and some sales by railroads have therefore been made in this locality at prices which are rather better than those offered to dealers by consumers in eastern Pennsylvania. Some quite low prices have been reported on Wrought Scrap, but this has undoubtedly been in instances in which the holders were obliged to move the material. We quote approximate prices per gross ton, New York or vicinity, as follows:

Old Iron Rails.....	\$22.50 to \$23.50
Relaying Rails.....	25.00 to 26.00
Old Steel Rails, rerolling lengths.....	16.50 to 17.50
Old Steel Rails, short pieces.....	16.00 to 17.00
Heavy Melting Steel Scrap.....	16.00 to 17.00
Standard Hammered Iron Car Axles.....	26.00 to 27.00
Old Steel Car Axles.....	21.00 to 22.00
No. 1 Railroad Wrought.....	21.50 to 22.00
Iron Track Scrap.....	18.50 to 19.25
No. 1 Yard Wrought, long.....	19.50 to 20.50
No. 1 Yard Wrought, short.....	17.50 to 18.50
Wrought Pipe.....	14.75 to 15.25
Light Iron.....	11.50 to 12.00
Cast Borings.....	0.25 to 0.50
Wrought Turnings.....	13.00 to 13.50
Old Car Wheels.....	18.50 to 19.00
No. 1 Machinery Cast.....	15.00 to 15.25
Stove Plate.....	12.00 to 13.00
Malleable Cast.....	16.00 to 16.50

Metal Market.

NEW YORK, January 24, 1906.

Pig Tin.—Business during the latter part of last week was very active, and it is estimated that between 300 and 400 tons of Tin were sold to go into consumption. The arrival of the Maine on the 20th and the Minnetonka on the 22d, bringing together 1865 tons, afforded a temporary relief to the spot market, which was very bare of stocks. It is stated that fully two-thirds of these combined cargoes went into consumption. Deliveries into consumption during January will be upward of 3600 tons, according to trustworthy authorities, as there were 800 tons on hand the first of the month, and 1600 tons arrived between the 1st and 20th, making a total of 2400 tons available. Good ground for believing that the greater part of this went into consumption is found in the fact that on the 20th there was practically no spot Tin to be had, although offers of exceedingly good prices were made. At the rate of 2400 tons for 20 days, it is reasonably estimated that the deliveries for 30 days will be upward of 3600 tons. The arrivals so far this month aggregate 3520 tons, and there are afloat for American ports 3110 tons. To-day's market is slightly firmer than yesterday's. Sales were made on the 23d at 36.40c., and to-day's price is 36.50c. The London market is slightly firmer at £165 15s. for both spot and futures. The Tin Plate mills are reported to be running as nearly to the limit of their capacity as the supply of Black Plates will permit.

Copper.—The market is considerably easier and quotations are purely nominal at 18c to 18.37½c. for nearby deliveries of both Lake and Electrolytic; 17.75c. to 18c. for casting grades. Whether this is the actual turn of the market or only a temporary recession for speculative purposes is hard to determine. At present there is practically no business, with little offering of sellers to sell and little disposition on the part of buyers to buy. With the above quotations in mind it must be taken into account that the largest Lake producers are sold for two or three months ahead; consequently any demand for special brands, such as Calumet & Hecla or Quincy, will probably meet with considerable advances from these quotations. So many contracts for future delivery were made in the last quarter of last year that it is questionable whether a large amount of Copper could be delivered at the present quotations. Resales of Chinese Copper have very little effect on the present market. While offerings may be made at low figures, there always appears to be some hitch before the deals are consummated. The London market is easier, with spot quoted at £78 10s., futures at £77 and best select at £84 10s.

Pig Lead.—The market is again easier, both in New

York and St. Louis. There is little business at the present quotation of 5.75c. in New York or 5.45c. in St. Louis. The drop in price in St. Louis is especially notable, being 35 points in a week. Lead Ore is also \$5 a ton lower. In London the market is slightly higher than a week ago at £16 18s. 9d.

Spelter.—Slightly lower prices prevail in St. Louis. In New York sellers are holding Spelter at 6.40c. to 6.50c. for spot January and February. In St. Louis 6.35c. is asked, with but few takers. The London market is unchanged at £28 2s. 6d.

Quicksilver.—Flasks of 75 lbs. in 100-flask lots are held at \$41. In London Rothschild's price is unchanged at £7 7s. 6d.

Nickel.—There is no change in the market. Large lots are selling at 40c. per lb., smaller quantities at 45c. to 50c.

Tin Plate.—The mills are working as near the limit of their capacity as the supply of Black Plates will permit. New business is dull, owing to consumers covering their requirements before the recent advance. In New York 100-lb., 14 x 20, IC Coke Plates are held at \$3.69; in Pittsburgh \$3.50.

Old Metals.—The further easing of prices on raw materials has had little effect on the Old Metal market, but Copper quotations are slightly lower. For New York deliveries we revise quotations as follows:

	Cents.
Copper, Heavy Cut and Crucible.....	17.75 to 18.00
Copper, Heavy and Wire.....	17.25 to 17.75
Copper, Light and Bottoms.....	15.75 to 16.00
Brass, Heavy.....	12.00 to 12.50
Brass, Light.....	10.25 to 10.50
Clean Brass Turnings.....	10.50 to 10.75
Composition Turnings.....	13.25 to 14.00
Heavy Machinery Composition.....	15.25 to 15.75
Lead, Heavy.....	5.40 to 5.50
Lead, Tea.....	5.15 to 5.25
Zinc, Scrap.....	4.85 to 5.10
Aluminum Scrap.....	20.00 to 25.00

Iron and Industrial Stocks.

NEW YORK, January 24, 1906.

The United States Steel stocks and Colorado Fuel attracted most attention during the past week. Steel preferred made a new high record, reaching 113¼ on both Saturday and Monday. The common also made a new high record for this movement, touching 46¼ on Saturday. Colorado Fuel continued its upward course, reaching 82¼ today. The other Iron and Steel stocks have been very strong, but their fluctuations have not covered a wide range. In most instances the movement during the week would not amount to more than \$2 a share. Last transactions up to 1.30 p.m. to-day were made at the following prices: Can common 11¼, preferred 71½; Car & Foundry common 47½, preferred 105; Locomotive common 74, preferred 118½; Steel Foundries common 14½, preferred 52½; Colorado Fuel 82¼; Pressed Steel common 64, preferred 103; Railway Spring common 61¼; Republic common 36½, preferred 108; Sloss-Sheffield common 92; Tennessee Coal 158½; United States Cast Iron Pipe 51¼, preferred 96¼; United States Steel common 45¼, preferred 112¾.

The underwriting syndicate for the \$3,500,000 bonds of the American Steel Foundries was closed Saturday last. The stockholders took \$1,585,300 of the bonds and the underwriting syndicate the remainder. The bonds have been traded in on the New York curb, the initial sales having been made at 80. The highest price thus far realized was 93, which was touched on Tuesday of this week.

Dividends.—The Cambria Steel Company, Johnstown, Pa., which has just declared the regular semiannual dividend at the rate of 3 per cent. per annum on \$45,000,000 capital stock, and which has maintained this rate regularly since the capital was raised to that figure in 1901, has in this period of four years and two months earned a total net income available for dividends of \$13,428,884. Out of this income \$6,075,000 in dividends has been paid to stockholders, or considerably less than 50 per cent., the majority of the earnings remaining with the property for its physical improvement and extension and for the strengthening of its cash working capital.

Niles Car & Mfg. Company, Niles, Ohio, has declared its first semiannual dividend of 3 per cent. J. A. Hanna, of Cleveland, was selected a director to succeed William Herbert; Frank C. Robbins was re-elected president and the other officials were also re-elected.

Monongahela River Consolidated Coal & Coke Company, Pittsburgh, has declared a dividend of 97 cents a share, which compares with the dividend of 77 cents paid last year.

The organization of the New Jersey & West Virginia Bridge Company, which was formed by the consolidation of the West Virginia Bridge & Construction Company, Wheeling, W. Va., and the New Jersey Bridge Company,

Manasquan, N. J., has been completed with F. M. Peet as president; Edward Hazlett and Charles F. Paxton, vice-presidents; F. M. Wyant, treasurer, and T. H. Thomas, secretary. The Board of Directors is composed of these gentlemen and George A. Laughlin, C. H. Hubbard, Senator S. B. Elkins, J. J. Holloway, W. E. Stone and E. W. Oglebay.

Central American Notes.

LA LIBERTAD, C. A., January 13, 1906.—There seems to be little doubt that private transportation companies are doing their best to block the canal work; the isthmus is clogged with freight and nobody seems to have any orders to move it. There are furthermore a number of people going the rounds trying to make the laborers discontented. One thing has already been gained by the authorities in the canal zone and that is, they have conquered the fever as it never has been before. Although Panama is preparing for presidential elections the country is quiet.

The Guatemala Government has decided to extend the celebration of Minerva by increasing the purchases of educational material, iron desks, seats, &c., and the erection of several new schools, which being in the earthquake section will most probably be of steel frames. The yellow fever at Zacapa certainly retarded work on the Northern Railroad for a time; construction is now going on as usual and several cargoes of rails and material are being unloaded at Puerto Barrios. The project of opening up Port Iztapa again is now being considered by the Government. This is a much better landing place than San José, only ten miles away, and in a storm, once the harbor is dredged, the shipping would be quite safe. The Government is at present in condition to carry out this work, which besides the necessary dredging, will mean the construction of a breakwater, steel piers, iron warehouses and, finally, a short line of railroad to connect Escluintla, and thereby the capital and San José, with the new port. It is understood that before long the authorities will call for bids in each of these lines of work.

With the rise in the price of silver all these countries are looking up and improvements in lines of communication are especially to be noted. New steel bridges are to be put on the Motagua, Rio Grande and the Platanos. On the new road from San Lorenzo to Tegucigalpa, Honduras, a line of automobiles is soon to be inaugurated and thence to the mines of Rosario and Valle.

The project of a railroad from Belize to Caban is again being put forth. Belize is practically out of the world now, whereas a short railroad would connect it either north or south with the Central or Pacific railroads. Belize to-day exports a large part of the mahogany and ebony of the world, as well as valuable cargoes of fruits and coffee. Its imports include every line of hardware and manufactured goods.

The fever on the Atlantic coast at the Caribbean, down to Port Limon and including Puerto Cortez, has entirely disappeared. Work on the Cortez Railroad, which was swept away by the late cyclone, is progressing. Several cargoes of rails and railroad material have lately arrived and a new bridge over the Ulna is now being erected. A new line of steamers is to be put on between Galveston, Progreso and the Bay Islands of Utila, to connect finally with Bluefields. The islands are rich in natural products and have scarcely been touched by trade. As to Bluefields, if the government of Nicaragua is kept from meddling with American miners in peaceful pursuit of their trade, a great boom may be expected in the gold region at Prinzapulka and the Rama. The company which is now dredging the Coco is now putting on a small line of steamers which will connect with the gold and copper mines of Segovia. It is rumored that the Rockefeller interests are back of this enterprise, which contemplates eventually to build a line from the Atlantic (Caribbean) to the Pacific, probably making the terminus at San Juan del Norte. This would take in valuable coffee and mining sections and almost all of the old canal region. All the Eastern section is sparsely populated.

The Machinery Trade.

NEW YORK, January 24, 1906.

Although some fair-sized lists of machinery requirements came before the trade during the week, there was no large buying, and several important matters that it was thought would be closed are still open. The Pennsylvania Coal Company has some orders to place yet on its power plant for the Old Forge Colliery, and the Bethlehem Steel Corporation has not as yet placed contracts for its new blooming mill. Dealers in electrical equipment for railroads, while busy, are looking for a much greater demand when spring opens and a number of railroad extensions now contemplated are begun in real earnest. Machinery exports to Germany are very large and there is a rush on the part of those buying for export to that country to get deliveries before March 1, when the new restrictive tariff law goes into effect. The volume of trade with Germany between now and that time is expected to exceed all records. Some of those who have bought for export to Germany are considerably worried over deliveries, and they say that a great deal of machinery that was ordered for delivery before March will not be sent over in time to escape the heavy tariff duties. German dealers buying here say that the exports of machinery to that country will fall off considerably after March in some lines. Some dealers here would not be surprised to learn that German exporters have been stocking up on machinery on which the tariff will be raised, and they suspect that not all of the machinery sent over is for immediate use. Most of the buying that is being done is in the machine tool lines, although there is a good trade in parts of machinery on which an extra tariff will be levied. Unfortunately for the buyers, the machinery wanted principally is harder to get for early delivery, and many disappointments have ensued.

The large amount of building that is going on in New York is having its effect on the trade in electric motors, power plants for elevators and similar machinery. A number of hotels and apartment houses are going up up-town, and some of them will require considerable machinery equipment. The trade in that line promises to be good all winter. One of the reasons for the heavy demand for equipments for hotels, apartment houses and the like at this time of the year is the fact that there has been an open winter so far.

Important Machinery Requirements.

One of the first railroads to come into the market this year for machinery is the Norfolk & Western Railroad, which has inquiries out for a fair-sized lot of machine tools which, we understand, are intended for the proposed new shops at Roanoke, Va. It will be remembered that the company is to make improvements at that point, at a cost of \$1,000,000, \$200,000 of which is to be used for shop extensions and equipment.

Rossiter, McGovern & Co. have been incorporated at Patchogue, Suffolk County, L. I., with a capital stock of \$300,000, to take over the New Jersey corporation of that name. It is the purpose of the new corporation to erect a large plant on the water front in Brooklyn and to enter into general contracting for the equipment of railroads and the like. The company will undertake such contracts as are assumed by Westinghouse, Church, Kerr & Co., General Electric Company and similar big engineering concerns. The plant which Rossiter, McGovern & Co. now occupy at Jersey City will probably be abandoned when the Brooklyn plant is built. The new concern will be a large one, and John C. Brackenridge, formerly commissioner of public works in this city and before that general manager and chief engineer of the Brooklyn Rapid Transit Company, has been made president. The Board of Directors includes Clinton L. Rossiter, the president of the Long Island Loan & Trust Company; D. H. Valentine, who is a director in the Brooklyn Rapid Transit Company; Frank McGovern of Rossiter, McGovern & Co., and Edward Rossiter, treasurer of the New York Central Railroad. Plans are now being prepared for the new plant, and work on it will be rushed as fast as possible.

The Standard Roller Bearing Company, Philadelphia, Pa., which has been buying quite largely of machine tools for the past few months, is in the market for the following additional machines for equipping the new extensions to its works: five upright drills, 18 to 24 inches; twenty 16 and 18-inch lathes; four cutting off machines, similar to Hurlbert & Rogers, 6 or 8-inch; four Potter & Johnson automatic machines; three Fay & Scott automatic machines; ten hand screw machines of large size and ten Brown & Sharpe universal grinders, Nos. 2 and 3.

The Penn Bridge Company, Beaver Falls, Pa., has been reorganized and the capital stock has been increased from \$50,000 to \$500,000. The company advises us that it will spend upwards of \$200,000 in improvements and additions to its plant. Considerable new equipment suitable for structural shops will be needed for these enlargements. The directors are: S. P. White, F. S. White, J. F. Mitchell, C. H. Vaughn and R. J. Hier, all of New Brighton, Pa.

The National Cellular Steel Company, whose main offices

are in the Lords Court Building, 27 William street, New York, intends to enlarge its plant at Covington, Ky. "R. Morgan Olcott, president of the company, states that work on the addition will be begun shortly, but no plans have been prepared as yet. From time to time within the next year or so further increases will be made.

The Michigan Copper & Brass Company, Detroit, Mich., which was recently organized with a capital stock of \$800,000 and at the head of which is George H. Barbour, vice-president and general manager of the Michigan Stove Company, has purchased a large piece of property in the west end of the city, located on a street car line, upon which it will build a large and modern plant as soon as the plans and specifications can be prepared. Over half of the capital stock has already been paid in and it is hoped to have the new plant ready for business inside of six months. The works will be of sufficient size to turn out not less than \$1,500,000 of products the first year, and will be so constructed that they can be added to from time to time.

Contracts for the open hearth furnaces for the steel plant and rolling mills to be erected on Staten Island by Milliken Bros., 11 Broadway, have been let to Alex. Laughlin & Co., Pittsburgh, Pa., and the contract for the soaking pit furnaces have been awarded to the S. R. Smythe Company, Pittsburgh. The Morgan Construction Company, Worcester, Mass., will furnish the continuous heating furnaces.

A machine shop is being erected at Reading, Pa., by M. J. Drummond & Co., 182 Broadway, New York, to be operated in connection with the firm's plant at that place. The building will be about 100 feet long and the contract for the structure has been awarded to George W. Beard & Co. All the machinery equipment has not been contracted for as yet and some contracts are now being let. The buying is being done at the New York office of the company.

Power Work.

The Stirling Consolidated Boiler Company has been awarded a contract for the erection of 12 350 horse-power boilers to be installed in the principal power plant of the Camden & Atlantic City electric line of the West Jersey & Sea Shore Railroad. A power house will be erected at Westville, N. J., 6 miles southeast of Camden, and the boilers will be built in six batteries. The electric equipment of the power plant is being furnished by the General Electric Company. There will be seven substations erected in connection with the line, and Stern & Silverman, Philadelphia, have the specifications in charge. Considerable machinery equipment is now being bought for equipping the power house, and the total expenditure for the line will amount to a large sum. The Clarksville Electric Light & Railway Company, Clarksville, Tenn., has purchased for its new power plant two 350 horse-power high pressure water tube boilers, besides heaters, pumps, stack and piping, from the Stirling Company, and generator, turbine, excitors, switchboard and accessories from the General Electric Company, Schenectady, N. Y.

A plan to take up the water of Feather River, in northern California, and develop 400,000 horse-power after carrying it through tunnels and aqueducts in order to supply power and electricity for the towns of the Sacramento Valley, is being projected by Northern capitalists. A \$50,000 corporation has been formed, and the law firm of I. Brown, Wilson & Co. is organizing the company. Edward Hawley, 25 Broad street, New York, and F. H. Wray and A. C. Bedford of New York are interested. The plan is in its infancy yet, and only preliminary engineering estimates have been made. It is thought that the construction of the plant will be begun next summer, and the scheme will involve a large outlay for machinery.

Catalogues Wanted.—Paul S. Carter, purchasing agent in the United States for the Government of the Philippine Islands, Whitehall Building, New York, desires to have 1905 and 1906 catalogues, with price lists and discount sheets. It is necessary to have three copies of each.

Spear & Jackson, Aetna Works, Sheffield, England, would like to get catalogues of band-saw making and repair machinery, including toothing, setting and sharpening machines. Catalogues should be addressed to L. Jackson Coombe, in care of the firm.

Cincinnati Machinery Market.

CINCINNATI, OHIO, January 23, 1906.

The volume of new work has increased. Reports received from the various machine tool builders tally in this respect and all of them are contracted ahead for several months. There is no question that a large amount of business in many instances is lost owing to late deliveries, but there appears to be no way to remedy the matter. Prices are to all appearances being firmly maintained and there are reports extant of some manufacturers having advanced prices on all their machines. This is in keeping with the general feeling that something must be done to offset the high price paid for skilled labor and raw material. Foreign trade is maintaining a steady pace and but for the internal

troubles now taking place in Russia would show an enormous increase.

The Industrial Bureau will hold its annual meeting for the election of officers January 24. William Lodge, president of the bureau, will speak on the work of the past year, which will be followed by a banquet.

Work has been commenced on the new steel castings plant by the Schlieper Company, which has the contract for erecting the buildings. The company has quite a large force of men at work and hopes to be ready to turn the buildings over to the company by April 1. Temporary offices which were formerly in Secretary Finch's office have now been transferred to a building adjoining the new plant, where Superintendent Robinson is on hand directing the work of construction.

The new plant of the Pothoff & Frey Iron Company is now under construction and will be in readiness for occupancy by the middle of the year. The company will have greatly increased facilities for handling its output, which is necessitated by the immense amount of structural work that is planned for the year, particularly in this city.

The Watkins Laundry Machinery Company last week increased its capital stock from \$200,000 to \$450,000. It is understood that the company will greatly enlarge its plant, having been unable to keep up with new orders coming in.

The annual meeting of the American Tool Works Company was held January 16, and the following directors were elected: Franklin Alter, J. B. Doan, H. H. Peck, R. S. Alter, Henry Luers and A. B. Voorheis. The directors then met in executive session and elected the following officers: Franklin Alter, president; Henry Luers, secretary and treasurer; J. B. Doan, vice-president and general manager. The company reports a satisfactory year's business, with prospects very bright for 1906.

Chicago Machinery Market.

CHICAGO, ILL., January 23, 1906.

The demand for electrical machinery as indicated by orders and specifications received by manufacturers thus far this year promises to greatly exceed last year's big record, and notwithstanding the greatly increased capacity of such plants as the Western Electric Company and the Allis-Chalmers Company their output has been sold for months in the future. The rapid development of interurban electric roads throughout the west and northwest is calling for tremendous installations, while the growth of electric power stations for lighting purposes is greater than ever. Manufacturers of light motors are also handicapped by insufficient productive capacity due to the heavy demand for electric drives in machine shops which are rapidly displacing line shaft where electric power is available for shop operations. Builders of heavy engines for rolling mill and blast furnace work will find this a productive field this year on account of the heavy requirements of the Illinois Steel Company for its new Buffington plant, and in addition several of the old blowing engines at the South Works are to be replaced and the blowing capacity is to be greatly increased. The Iroquois Iron Company's power plant requirements for its new blast furnace remain unplaced and will consist of several blowing engines and large electric and steam generating units.

Steam power, chandlers, drills, stone saw mills and other similar equipment are required by the West Kentucky Stone Company, Paducah, Ky., and catalogues and quotations are solicited from all manufacturers of such machinery. This company is capitalized at \$150,000 and has purchased a tract of land which has upon it a mountain of oolitic stone. The company states that this rock is well situated for easy mining and delivery of transportation. Officers of the company are as follows: L. Haydon, president, Hopkinsville, Ky.; S. G. Givens, vice-president, Paducah, Ky.; R. R. Winston, secretary and treasurer, Paducah, Ky., and A. R. Givens, superintendent of mines, Elkton, Ky.

General contract for the erection of a locomotive shop to be built by the Missouri, Kansas & Texas Railroad at Parsons, Kans., has been let to James Stewart & Co., St. Louis. The building will be 160 x 800 feet, of steel construction, and will be used for the repair of locomotives, being equipped with all modern machinery for this purpose. Contract for the structural steel has already been awarded and the contractors are now ready to sublet the other work on the building.

The Stamping & Tool Company, La Crosse, Wis., has increased its capital stock from \$10,000 to \$25,000 and will in the spring erect a two-story brick factory with about 15,000 square feet of floor space. The building and equipment to be purchased will cost \$15,000.

Extensive additions are to be made during the present year to the plant of the Joliet Bridge & Iron Company, Joliet, Ill. Announcement was made to this effect by Robert C. Morrison, president of the company, at the annual banquet tendered to the salesmen and representatives of this concern January 10th. A new building will be erected and

equipped at an approximate cost of \$50,000. Some machine tools have already been purchased from the Cleveland Punch & Shear Works Company, Cleveland, Ohio, and additional equipment will be required, although plans are still in a formative state in this particular.

The Chicago, Milwaukee & St. Paul Railroad, Chicago, is having plans prepared by its architect, J. U. Nettenstrom, for the erection at West Milwaukee of pattern storage and pattern shop buildings. These buildings will be constructed entirely of reinforced concrete and will cost \$75,000.

The Greenleaf Stone Company, Green Bay, Wis., is in the market for a hot water heater, pumps, belting, shafting and pulleys. Machinery already purchased consists of two 100 horse-power boilers and one 200 horse-power Corliss engine from the Atlas Engine Works, Indianapolis, Ind.; a 500 foot compound air compressor from the Chicago Pneumatic Tool Company, Chicago; crushing machinery, screens and elevator from the Austin Mfg. Company, Harvey, Ill.

The city of Winnipeg, Manitoba, will receive bids until February 12 on two 500 horse-power electric generators.

The success of steam turbines for the economic generation of electric current as demonstrated at the Fisk street station of the Commonwealth Electric Company, Chicago, has led this company to order four additional turbines for installation during the present year. These new turbines will be capable of developing 18,000 horse-power each, including 50 per cent. over load. There are already installed in this plant four units of the Curtis type, three of which develop a total of 33,000 horse-power, and one, installed last year, developing 15,000 horse-power. The new turbines with the ones already installed will therefore afford a capacity at the Fisk street station of 120,000 horse-power.

Philadelphia Machinery Market.

PHILADELPHIA, PA., January 23, 1906.

Orders have been coming in pretty freely during the past week, and while they have not been particularly large individually the volume is very encouraging to the trade. There has been a good demand for small tools; in fact, most of the business recently placed has been for tools of that class. A few orders for small lots of tools from the various railroads have been received during the past week. While some good propositions for general machine shop equipment are expected out before long, nothing of importance has developed recently.

The absence of immediate business for large quantities of tools or for those of the heavier types is not unusual at this time, and it is scarcely expected that orders for any extensive equipment will be placed during the remainder of the present month. Manufacturers' order books are well filled, however, and the amount of work on hand will keep most of them fully occupied for months ahead. In some instances a short let-up in the demand would not be entirely unwelcome, as it would enable builders in some lines of tools to catch up on the work already in hand. Deliveries are, on the whole, unchanged. Some classes of heavy tools are not to be had inside of six months' time, while on others three or four months' time is considered very good delivery. This condition has become so established that orders are being placed accordingly by those who can estimate their needs at so advanced a date.

Some little improvement is to be noted in the foreign demand, but this is mostly confined to special tools and other special equipment. Some manufacturers, notably those of pressed steel pulleys and hangers, have had an increased demand for their lines, but that for the general line of machinery and tools shows but little improvement. As long as machine tool builders in this country have their capacities fully taken with domestic work it is hardly probable that any determined effort for the foreign trade will be made.

The demand for the smaller engines and boilers is only fair, and considerably more business could be done by manufacturers in those lines. Heavy engines for power purposes have been in good demand, but at the moment are somewhat inactive. Some very nice business in this line, however, is expected at an early date.

Second-hand machinery and tools have been in good demand. The inability to obtain prompt deliveries on machine tools has in cases led to the purchase of second-hand tools, if only for temporary use, by some parties to help out until new tools, already purchased, can be delivered.

The foundries, both iron and steel, are very busy. The gray iron foundry situation in this city is improving steadily. Those which were affected by the strike of core makers and molders some months ago are now turning out an average of 65 per cent. of the total tonnage capacity before the strike, and have at work about 75 per cent. of the number of molders formerly employed. Castings, we are advised, can now be had fairly promptly in some cases, and the situation on the whole is said to be much stronger. Capacities of the steel casting plants are taxed to meet the demand for castings and in many instances they are unable to take on all the work offered and get it out at times specified by their customers.

The Eynon-Evans Mfg. Company has plans prepared for

an addition to its machine shop, which it expects to erect during the coming summer. On completion of this addition the company will be able to produce its special surface condensers, for which it reports a good demand, in sizes up to 5000 kilowatts. The plant is busy in all departments. Extensive orders for acid-resisting bronze castings, as well as for this metal in pigs, have been received from the various coal-mining companies, and the foundry is particularly busy on this and other work. The demand for steam jet blowers is good and orders have been booked from many steel plants, including one for fourteen additional blowers from the Lukens Iron & Steel Company, Coatesville, Pa.

The Stoever Foundry & Mfg. Company, Myerstown, Pa., transacted a very satisfactory business during the past year. This company has planned a number of changes in its plant, operations on which are expected to be started early in the spring. These include an extension to the foundry, a new pattern shop and warehouse, and a new office building and drawing room. Extensions to the machine shop and other minor improvements are also to be made. New equipment for these various buildings, as well as additions to the present equipment, will be required, but their nature has not yet been determined upon.

The Hilles & Jones Company, Wilmington, Del., has extended its line of manufacture to include lever or alligator shears from the smaller up to the largest sizes of machines of this type that are practicable. It is also getting out a line of bulldozing machines for car shops, agricultural implement and other manufactures. All departments of the plant are busy. The foundry has a large tonnage of work on hand and in prospect. The machine tool department has a good volume of business on the books, with inquiries good, and the prospects for future business very satisfactory.

The Standard Pressed Steel Company, maker of the American Pioneer pressed steel shaft hanger, reports the month of December, 1905, as the largest, in point of orders taken, in the history of the company. January so far has developed five and one-half times as much business as was transacted in the same month last year. Orders for hangers are heavier than ever, both from foreign and domestic customers. The South and West are leading in the volume of business transacted in this country, while there is a general betterment in foreign orders. Some large shipments of hangers have recently been made to the Pacific Coast, while export orders include one of 500 pulleys of various sizes for parties in Austria.

The American Pulley Company notes an increased demand for pressed steel pulleys both from foreign and domestic sources. Since the first of the year the trade in the Southern and Western States has materially improved, and large shipments of pulleys have been made to purchasers in those sections. Export orders to Australia, New Zealand and many points in Europe have been made, and the indications for increasing business are considered favorable.

The Energy Elevator Company is busy. The local demand for elevators is extremely good, while that from out of town customers has materially increased. A large electric freight elevator is to be installed for Warren, Balderston & Co., Trenton, N. J., and another of the same type is being erected for James Aull, 9 South Front street, this city. Hand and power freight elevators have also been shipped to a number of parties, including among others customers in Stonington, Conn.; Hazleton, Pa.; St. Louis, Mo.; Centreville, Mich.; Perkaspie, Pa., and Michigan City, Ind.

Wilson, Harris & Richards, architects and engineers, Drexel Building, have completed plans and specifications and invited estimates for an addition to the machine shops of the Pratt & Whitney Company at Hartford, Conn. The building is to be four stories high, 75 x 300 feet, and of fire proof construction throughout. Estimates will be received up to January 30.

New England Machinery Market.

WORCESTER, MASS., January 23, 1906.

The demand for machine tools continues in excess of the supply and dealers are experiencing many disappointments in their inability to meet the wants of their customers. Dilatory buyers, who take time to make up their minds after they have begun inquiries, are finding that deliveries first quoted them are set along weeks at a jump as a result of delays in placing orders. The manufacturers are living pretty rigidly up to the rule of "first come first served."

There are rumors in Boston that very large orders for machine tools are contemplated for new works, but the names of the prospective buyers are known to but few. It is understood that while inquiries indicating large business have been started, nothing yet is decided and no lists of tools are ready for the dealers or manufacturers. The New York, New Haven & Hartford Railroad has not yet sent out its list of tools which will be required for the new locomotive repair shop at Readville, which is to cost upward of \$1,000,000. This list is eagerly awaited, though it must be added that there is less anxiety concerning it than would have been the case six months ago, before business had started on its upward course.

Collections could not be easier than they are to-day. Purchasers have the money to pay within the customary 30 days, and where discounts for cash are offered they are freely taken advantage of. Less chances are taken in selling goods than when times are bad, because there is enough business afoot with customers of first-class credits to make it unnecessary to run risks on sales where the resources of buyers are not fully known, which is often the case where new industries are being established. Altogether the matter of getting pay for machinery and materials sold has ceased to be an anxiety.

The foundrymen of the Merrimack Valley who employ union molders are having their troubles with demands by the Molders' Union for a nine-hour day and an advance from \$2.50 to \$2.75 a day minimum wage. The demand has already been made in several cities, and in Lowell the molders of several foundries have gone on strike because of the refusal of the foundrymen to grant the demands. One firm of foundrymen, Doherty Bros., Lowell, has compromised with the union, granting the increase in wages, but continuing the foundry on a ten-hour basis. The large textile machinery companies are not affected.

Foundries everywhere are exceedingly busy, but there is a strong inclination on the part of employers to assist the customers of foundries where a strike is in progress by supplying the required supply of castings.

The Chelmsford Foundry Company, North Chelmsford, Mass., which is one of the companies affected by the Lowell strike, has notified the men who have remained loyal during the strike of an advance in wages of 10 per cent., a reduction from a fifty-eight to a fifty-five hour week, and other minor concessions.

The steel foundries are rushed to the limit of their capacity and still are unable to keep up with orders. The Worcester Steel Foundry Company, Worcester, is erecting an addition to contain several new crucible furnaces, and it is planned to further increase the capacity of the foundry later in the season.

The promoters of the Boston, Cape Cod & New York Canal Company state that work on the Cape Cod Canal, connecting Buzzards Bay and Barnstable Bay, will begin in the spring. This work has been contemplated for many years, and when it is accomplished much good will come of it to those New England ports which now require the passage around Cape Cod for vessels going to and from New York and other points south of the Cape. The canal will shorten the route 74 miles, as compared with the "inside route," so-called, through Vineyard Sound, and 142 miles as compared with the outside route. The saving will mean more than the difference in mileage. In fact, the chief gain will be in time wasted in the dangerous waters of the Cape during storms and fogs, as well as in the additional safety to shipping. Consequently New England has long looked for the time when the canal would be established. So many times has it been promised by enthusiastic promoters that skepticism will only be eliminated when the work has actually begun on a large scale. The Boston, Cape Cod & New York Canal Company proposes to issue \$6,000,000 in stock and \$6,000,000 in bonds to secure the requisite funds. As canal construction goes, this waterway will not be so costly to establish as many others which are doing a profitable business. The promoters state that the work of construction will require two and one-half years.

The United Shoe Machinery Company, Boston, Mass., is considering large extensions to its new plant at Beverly, Mass., by extending each of the factory buildings, A, B and C, 300 feet. The company needs more room in order to concentrate its business at Beverly, and these additions would give necessary space, for the buildings are four stories and basement, and the triple extension would add a very large amount of manufacturing area. But this work will not be done, the company states, unless contractors and builders will agree to erect this year a number of tenement houses at Beverly in order that there may be available homes for new employees. If this is not done it may be decided to permanently locate a part of the works at Winchester, in the factory of one of the companies which were merged to constitute the United Shoe Machinery Company. A large extension of the foundry and the enlargement of the power plant at Beverly have already been noted in *The Iron Age*.

The Chandler Planer Company, Ayer, Mass., a builder of metal planers, is arranging to conduct a series of tests on locomotive driving boxes as a result of correspondence with the superintendent of motive power of the Pennsylvania Railroad. Six locomotive driving boxes have been shipped from the Altoona shops, and these will constitute a severe test of the planer.

The New England Stone Saw Company, Barre, Vt., will be the market for a 200 horse-power steam plant and an air compressor of about 500 feet capacity. The company was recently incorporated in Vermont with capital stock of \$50,000, to manufacture a patent stone saw blade. The incorporators are C. K. George and John Burnett, Milford, N. H., and A. J. Young and R. A. Hoar, Barre.

H. K. Bloodgood, New York, who owns a large estate at New Marlboro, Mass., has acquired three water privileges

on the Konkapot River in that town, with a total of about 250 horse-power. It is understood that Mr. Bloodgood intends to develop the power for electric purposes.

The Reed & Prince Mfg. Company, Worcester, Mass., manufacturers of machine screws and specialties, is to make important extensions to its works this season, along the lines laid down for construction last fall but deferred because of unavoidable delay in getting the necessary railroad siding. The main factory building will be extended, the addition being about 60 x 65 feet and four stories, this room being needed for general manufacturing purposes. In addition a one-story building, with monitor roof, will be erected, which will eventually be used as a wire mill. The original intention was to begin the manufacture of wire immediately, but now the probability is that nothing will be done in this department this year, excepting perhaps on experimental work with a few blocks.

An important change has been made in the management of the Holyoke Machine Works, Holyoke and Worcester, millwrights and builders of turbine water wheels, caused by the resignation of H. J. Frink, treasurer and general manager, who has been connected with the company for 26 years. The office of general manager carried with it the management of the Holyoke works. W. W. White, who has been manager of the Worcester works for a long time, has been elected president, which office includes the duties of manager of both plants. Stephen Holman, the controlling factor in the business, has been elected treasurer. Mr. White will divide his time between the two works.

The store at 44 Oliver street, Boston, formerly occupied by the American Radiator Company, has been taken by Thomas Crowther & Co., dealers in machine tools; the H. B. Smith Machine Company, Smithville, N. J., and the Berlin Machine Company, Beloit, Wis., the two latter being manufacturers of wood working machinery. The firm of Thomas Crowther & Co. established itself in business last spring and has been located at 19 Pearl street. It carries the lines of the Garvin Machine Company, New York, and the Hamilton Machine Tool Company, Hamilton, Ohio, and these two makes of machinery will hereafter be carried in stock. The H. B. Smith Machine Company and the Berlin Machine Company formerly had quarters in the Oliver Building. E. N. Heath, the manager of the H. B. Smith Machine Company's Boston office, also acts as agent for the Geiser Mfg. Company, builder of gas engines.

Joseph Joseph & Bros. Company, iron and steel, and the Railway Mfg. & Supply Company, Boston, which were recently burned out in the fire of the Factory Building Trust Building at South Boston, have leased a building at 26 Thorndike street, Cambridge, and will occupy it for the purposes of their business.

Wilson & Smith, Worcester, Mass., metal punching and die making, announced January 12 that the co-partnership under that name between J. Frederick Wilson and George A. Smith had been dissolved. The business will be continued by Mr. Wilson and Harry R. Sinclair under the name of the W. & S. Mfg. Company. Mr. Smith will take several months for a much needed rest before again taking up active duties. Mr. Sinclair, who succeeds Mr. Smith, is a graduate of the Worcester Polytechnic Institute in the department of Mechanics, in the class of 1893, and is a son of the senior Professor of Mechanics in that institution. He has been actively engaged in mechanical pursuits since his graduation, and is well fitted to take up the varied lines which the established business calls for. The facilities will be considerably enlarged.

Government Purchases.

WASHINGTON, D. C., January 24, 1906.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 20 for the following machine tools for the Eastern navy yards: Water tube boilers, traveling crane, lathes, jointer, grinder, milling machine, band saw, saw bench, planer, boring mill, pumps, steam winches and steam windlass.

The Isthmian Canal Commission will receive bids until February 2 for tin and copper shop machines and tools.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 13 for steam boiler, boiler feed pump, water heater and other supplies for the Charleston Navy Yard.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 6 for motor, valve reseating machine and other supplies for the Eastern navy yards.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 20 for a quantity of supplies for the Mare Island and Puget Sound navy yards, including motor drive outfit, &c.

The following bids were opened January 16 for supplies for the navy yards: Bidder 25, Brown Hoisting Machinery Company, New York; 36, Case Mfg. Company, Columbus, Ohio; 37, Cleveland Pneumatic Tool Company, Cleveland, Ohio; 42, Chicago Pneumatic Tool Company, New York; 75, Ingersoll-Rand Company, New York; 103,

Manhattan Supply Company, New York; 117, New Jersey Foundry & Machine Company, New York; 148, Standard Railway Equipment Company, St. Louis, Mo.; 159 George C. Thomas, New York; 167, White Hardware Company, Norfolk, Va.

Schedule No. 304.

Class 32. One combined grinding and buffing lathe—Bidder 103, \$210.

Schedule No. 306.

Class 65. 25 Little Giant drills and 60 Boyer hammers—Bidder 37, \$4945; 42, \$3924.50 and \$3524.50; 75, \$3772.50 and \$4470; 148, \$4682.50.

Class 70. One portable electric jib crane—Bidder 25, \$685; 36, \$900; 167, \$445.

Class 71. One electric hoist—Bidder 36, \$600; 117, \$695; 159, \$343; 167, \$446.

The following awards have been made for supplies for the navy yards, bids for which were opened December 5:

Baird Machinery Company, Pittsburgh, Pa., class 1, one twist drill emery grinding machine, \$61.90.

Smith-Courtney Company, Richmond, Va., class 3, one single spindle edge molding machine, \$140.

Garvin Machine Company, New York, class 4, one improved pipe cutting and threading machine, \$500.

Under bids opened December 19 for supplies for the navy yards, Henshaw, Bulkley & Co., San Francisco, Cal., have been awarded class 11, one double angle shear, \$2163, and Harron, Rickard & McCone, San Francisco Cal., class 12, one No. 4 giant key seater, \$641.25.

Under bids opened December 26 for supplies for the navy yards the following awards have been made:

Cleveland Automatic Machine Company, Cleveland, Ohio, class 51, one screw machine, \$1050.

Vandyck-Churchill Company, New York, class 52, one metal planer, \$2625; class 54, one engine lathe, \$1790.

Drew Machinery Agency, Manchester, N. H., one single frame steam hammer, \$742.

Handlen, Buck Mfg. Company, St. Louis, Mo., class 56, one portable boring bar, \$495.

J. W. Cregar Agency, Philadelphia, Pa., class 57, one 38-inch band saw, \$350.

American Ship Windlass Company, Providence, R. I., class 62, four steam windlasses, \$2100.

Class 53, one cold saw cutting off machine has been cancelled.

Under bids opened January 9 for supplies for the navy yards, the following awards have been made:

R. M. Wilkinson Company, Norfolk, Va., class 101, one electric hoist and runway, \$3000.

Prentiss Tool & Supply Company, New York, class 112, one arbor press \$118.75.

Baldwin, Tuthill & Bolton, Grand Rapids, Mich., class 116, one 14-inch shear and cross cut machine, \$53; class 117, one retoucher \$47.

Manning, Maxwell & Moore, New York, class 118, one portable hydraulic shaft straightener, \$351.

Brown & Sharpe Mfg. Company, Providence, R. I., class 121, one automatic screw machine, \$917.50.

J. H. Leonard & Co., New York, class 192, metal slitting saws, \$97.

B. F. Sturtevant Company, Hyde Park, Mass., class 249, two forced draft blowers, \$1257.04.

The Dodge Mfg. Company, Mishawaka, Ind., made unusually fast time on a rush order from the Morgan Engineering Company, Alliance, Ohio. On the night of January 5 there was a breakdown of power transmitting machinery in the plant of the latter company. There were heavy orders to be filled, and telegrams for new machinery were at once sent to the Dodge Company. Men were awakened from their sleep and work started before daylight. Among the machinery ordered were pulleys 16 feet in diameter and rope transmission wheels weighing 18 tons each, besides smaller grooved pulleys, floor stands, hangers, &c. By day and night work the company was able to ship by express on the 14th inst. one car load of finished castings. Express time was too slow, so during the night a special train was made up of engine and two cars, and early Monday morning, the moment the last piece of machinery was aboard, the train pulled out. All other trains on the Lake Shore were sidetracked to let pass the "Dodge-Morgan Special" (so named on large streamers hung along the cars). Three changes of engines, at Elkhart, Toledo and Cleveland, helped the train make record time.

The Monongahela River Consolidated Coal & Coke Company, Pittsburgh, has made a contract with the Midland Steel Company, now building a blast furnace at Industry, Pa., to deliver 250,000 tons of coal a year for five years.

The Tariff on Steel for Shipbuilding.

WASHINGTON, D. C., January 23, 1906.—The comparative cost of steel plates for shipbuilding in the United States and in Great Britain and other foreign countries and the relation of the tariff on iron and steel to the shipbuilding industry have formed the subject of an investigation which has just been concluded by the Merchant Marine Commission with a view to answering current arguments that a subsidy to American shipowners in foreign trade would, in fact, be "a subvention to the steel trust." Senator Gallinger, chairman of the commission, has taken the matter up with a number of the largest shipyards and in a report about to be presented to the Senate he embodies communications received from the William Cramp & Sons Ship & Engine Building Company and the New York Shipbuilding Company, which are among the concerns that have replied to the commission's inquiries. Following is an abstract of this interesting report:

Importations in Bond.

Sections 12 and 13 of the Dingley Act are as follows:

Sec. 12. That all materials of foreign production which may be necessary for the construction of vessels built in the United States for foreign account and ownership, or for the purpose of being employed in the foreign trade, including the trade between the Atlantic and Pacific ports of the United States, and all such materials necessary for the building of their machinery, and all articles necessary for their outfit and equipment, may be imported in bond under such regulations as the Secretary of the Treasury may prescribe; and upon proof that such materials have been used for such purposes no duties shall be paid thereon. But vessels receiving the benefit of this section shall not be allowed to engage in the coastwise trade of the United States more than two months in any one year, except upon the payment to the United States of the duties of which a rebate is herein allowed: Provided, That vessels built in the United States for foreign account and ownership shall not be allowed to engage in the coastwise trade of the United States.

Sec. 13. That all articles of foreign production needed for the repair of American vessels engaged in foreign trade, including the trade between the Atlantic and Pacific ports of the United States, may be withdrawn from bonded warehouses free of duty under such regulations as the Secretary of the Treasury may prescribe.

The effect of these sections is to give absolute free materials to the builders of American vessels for the foreign trade. For more than thirty years the materials for wooden vessels have been free, and iron and steel materials were nondutiable in the McKinley tariff of 1890.

Yet this free material privilege has had no appreciable success in checking the decline of ocean shipbuilding in America. Though all the steel plates and beams and angles and materials for the machinery can be brought from abroad without duty, no merchant vessels are constructed here for "foreign account and ownership," and very few are built "for the purpose of being employed in the foreign trade."

The truth is that tariff free materials do not touch the root of the difficulty at all. If the iron and steel required in the making of the machinery to produce woolen or worsted fabrics were admitted free of duty, the privilege might be of some value if the manufacturer continued to receive protection on his finished goods against the low wages of his competitors in Europe. But if the materials entering into the machinery were free, and if there were no protection whatever on the finished product of the woolen and worsted industry, it is not likely that there would be much demand for the free material machinery, or that many woolen or worsted mills would be running in the United States.

This is exactly the condition of the ocean shipbuilding industry, the one unprotected industry which is constantly face to face with very sharp foreign competition. The materials of the ships are free—just as free as law can make them. But few free materials are imported and no ships are built, because the shipowner, corresponding to the woolen or worsted manufacturer, has no protection from his government against the cheap wages or the subsidies of foreign lands.

Effect of a Subvention.

If, however, a subvention or subsidy were provided to protect and encourage the shipowner to run his ship con-

stantly in foreign trade, then he would have the motive which he almost wholly lacks for availing himself of the free material privilege. As it is now, nobody builds an ocean vessel in America without calculating to have to fall back on the coastwise trade, which is and always has been absolutely protected against foreign competition. Under such a law as that proposed by the Merchant Marine Commission a shipowner could safely contract to build a steamer of free materials if it seemed desirable and then employ the vessel under subvention exclusively in foreign commerce. But a subvention or some equivalent encouragement to run an American ocean steamship after she is built is indispensable, if any real vitality is to be given to the free material privilege.

An American shipowner who had a 10-year mail contract for a fleet of steamers in the trade to South America or the Orient would be in a position to command free material prices for the steel for his new ships. Indeed, it is assumed and understood in the shipbuilding trade that when a new ocean fleet is awaiting construction in the United States the steel will be forthcoming at the world's prices. Those steel makers who, as disclosed by the testimony before the Merchant Marine Commission, asked American builders \$32 per ton for plates, and delivered the same plates at Belfast, Ireland, for \$24, were dealing with lake yards and domestic vessels, to which the free material clauses do not apply. Prices of ship steel have advanced in England, so that they are now very much nearer to the rates charged here for coastwise vessels.

Any argument, therefore, that a subvention to American shipowners in foreign trade would be "a subvention to the steel trust" rests upon an insufficient understanding of the facts in the case, and of the broad free material privilege of the existing tariff. All that is needed to vitalize that privilege and make it of real and great importance to the American merchant marine is to protect and encourage the American shipowner by national subventions.

These subventions, as framed by the commission, never were intended to compensate for any such discrimination as that practiced by the steel makers who asked American builders \$32 a ton for ship plates and laid them down for \$24 a ton at Belfast. It is not the price of materials, or only that in relatively small part, which makes an American vessel cost more than a British vessel. The dominating factor is not the materials, but the wages of the skilled workman who fashions the plates, beams, etc., into the finished ship.

A Case in Point.

A vivid demonstration of this was afforded a few years ago when American and British yards bid against each other for the construction of a cargo steamer with a capacity of 5000 tons. There was a serious strike at that time in England, and because of this and other causes steel plates were selling there at \$40.86 a ton, as compared with \$28 in the United States. The materials for this ship would have cost the British builders \$80,000; the American builders, \$63,000. Yet, bidding against each other for the narrowest profit, the Americans offered an estimate of \$275,000; the British \$214,000. The chief reason for this was that American shipyard mechanics receive wages very nearly twice as high as those of their British competitors.

Yet this does not mean that American ships will always cost more than British ships. There was a time when American locomotives and railroad bridges cost a great deal more than British locomotives and bridges, but that was before locomotive and bridge building in this country had gathered experience, practiced standardizing, and achieved all the economies of large production. Now we manufacture locomotives and bridges and sell them in international competition all over the world. When, by firm and adequate encouragement to shipping, we develop shipbuilding also to a manufacturing business, the high wages paid to workmen in constant, not spasmodic, employment will not prevent a steady output of ships as low in cost as they are efficient and economical in operation.

Relative Cost of Plates.

The William Cramp & Sons Ship & Engine Building Company, in a letter to the chairman of the commission

under date of January 15, 1906, makes the following statement with regard to the relative cost of steel plates purchased in the United States and abroad:

Referring to your letter of the 11th inst., requesting to be informed as to the number of tons of steel plates and shapes required for the construction of each of four such steamers as we are now building for the New York & Cuba Mail Steamship Company and how much more the steel would cost if purchased at the ruling prices in this country than if imported from Great Britain, I beg to state as follows:

The amount of steel plates in one vessel is 900 tons and the amount of steel shapes in one vessel is 900 tons.

Recently, by reason of the rapid rise in the prices of materials in Great Britain the foreign builder pays almost as much for plates and shapes as we do; in fact the difference in cost between steel purchased in this country and abroad for vessels of this size would be as follows: Plates, \$5328; shapes, \$5880, making a total saving of \$11,208 in the material purchased abroad. The steamers referred to will cost complete upward of \$900,000 each, so that the difference in the cost of their steel plates and shapes between here and abroad represents only a little more than 1 per cent. of the total value of each steamer.

Where vessels have been intended for the foreign trade alone the various steel interests have offered to sell us the materials at the best export prices.

The New York Shipbuilding Company, under date of January 16, addressed the following communication to the chairman of the commission:

In response to your inquiry of the 11th inst. I beg to say that the last quotation which we have on foreign steel was under date of November 20, 1905, when we obtained prices for the purpose of quoting on a steamer to be built under sections 12 and 13, free list, Dingley law. It was afterward decided to build the steamer abroad.

The foreign and domestic prices at that date appear below. I may add that the domestic prices of steel are the same at the present time and I am not advised whether there has been any change in the foreign prices.

	Cents per lb.	
Plates: Steel Company of Scotland, f.o.b. Philadelphia, in bond.....	1.73½	
Shapes: Steel Company of Scotland, f.o.b. Philadelphia, in bond.....	1.64½	
Plates: Domestic, f.o.b. Philadelphia.....	1.73½	
Shapes: Domestic, f.o.b. Philadelphia.....	1.83½	
Difference in cost of plates and shapes for a 500-foot freight and passenger steamer built of foreign steel and domestic steel at the above prices, estimated as follows:		

	Domestic.		Foreign.		Differ- ence.
	Cost per lb. Cents.	Total.	Cost per lb. Cents.	Total.	
8,000,000 lbs. plates 1.73½		\$138,800	1.73½	\$138,600	\$200
3,000,000 lbs. shapes 1.83½		55,050	1.64½	49,350	5,700
Total.....		\$193,850		\$187,950	\$5,900

We would regard the above as a fair estimate of the amount of steel plates and shapes required in the building of a 500-foot steamer, but the amount of course would vary according to the type of vessel. A ship of this size would probably require from 4500 to 5000 tons. The completed value in this country of a vessel of this description would be about \$800,000 to \$900,000.

It is only fair to add that at the time the above foreign quotations were received ship plates and shapes were very high abroad, owing to the great activity there in shipbuilding.

Status of Shipping Bill.

The shipping bill is now before the Senate for consideration, and an effort will be made during the coming week to set a day for a vote on the question of its passage. In the House the measure is under consideration in the Committee on the Merchant Marine and Fisheries.

W. L. C.

Trade Publications.

Grab Buckets.—The Browning Engineering Company, Cleveland, Ohio. Bulletin No. 21, superseding bulletin No. 18. Illustrates the Browning square type automatic grab bucket and its method of operation. The uses of the bucket are indicated by illustrations showing the buckets handling sand, gravel, coal, ashes and slag.

Pipe Threading Machinery.—Stoever Foundry & Mfg. Company, Myerstown, Pa. Pamphlet. Has for its subject some new features in pipe threading and cutting off machinery and refers briefly to the points of excellence in the machines made by this company. Special reference is made to the manner of driving, the number of different speeds available, the construction of the die head and its means for adjusting and the automatic features in connection with the die head.

Coal Handling Machinery.—Jeffrey Mfg. Company, Columbus, Ohio. Catalogue No. 20; size, 6 x 9 inches; pages, 142. Specially devoted to machinery designed for handling coal at the mines. The contents are largely in the form of illustrations, with here and there a description where it may be needed, although in the main the text is merely in the nature

of captions for the engravings. A large number of the illustrations show typical installations. Line drawings show elevations of suggested equipments and illustrations of various parts in the equipment constitute the remainder. Everything necessary to a complete plant is shown, including buckets, conveyors, screens, crushers, cars, locomotives, drills, hoists, &c.

Tool Steel.—William Jessop's Sons, Limited, United States headquarters, 91 John street, New York City. Contains lists of sizes of tool and other kinds of steel carried in stock. These include tool and die steel, "Arc" high speed air hardening steel, rock drill, composite die, self hardening and double shear steel, special steel for twist drills, sheet and spring steel, steel circular saw plates, double refined steel and blister steel.

Crushing Machinery.—Sturtevant Mill Company, 125 Clayton street, Boston, Mass. Folder. Illustrates a few typical lines of its product, among these being steel rock crushers, roll jaw crushers, fine crushers, open door fine crushers and a rotary gyrating crusher for coarse work. The last is made in capacities from 2 to 200 tons per hour.

Boilers.—Springfield Boiler & Mfg. Company, Springfield, Ill. Pamphlet. Describes the Bronson boiler, which is sold exclusively by the Lyons Brothers Boiler Company, Fisher Building, Chicago, Ill. This boiler is a combination of tubular and water tube types, the water tube part being in the form of a flat arch serving as a roof to the furnace. The pamphlet shows a few of the details of the boiler and furnace. The boiler is claimed to be suitable for high pressures, inasmuch as the shell in the tubular part of the boiler is not directly exposed to the contact of the fire, hence is not in danger of being burnt. It is also claimed that there is little need of frequent cleaning and that the cleaning when necessary is very easily accomplished.

Generators.—National Electric Company, Milwaukee, Wis. Bulletin and mailing card. The former, No. 360, concerns alternating current generators, especially intended for driving by water wheels. The construction of the numerous parts is described in the usual complete way and several illustrations show machines of this type in use. A mailing card contains an illustration of one 350-kw. capacity, two of which were built for the Wausau Electric Company, Wausau, Wis.

Grinding Machinery.—The Gardner Machine Company, Beloit, Wis. Sheets forming the beginning of a loose leaf catalogue which will be added to from time to time. The present sheets are 8 x 9 inches in size and cover the organization which was effected last year and deal in particular with Gardner's improved disk grinder and Gardner's improved disk wheel press. These machines were described in *The Iron Age* November 21, 1905.

Finished Machine Keys, &c.—Standard Gauge Steel Company, Beaver Falls, Pa. Catalogue and Price-list. Size, 4½ x 6½ inches; pages, 96. Finished machine keys, gibs and keys, finished machine rack, compressed steel elevator guides, compression shaft couplings and flat, square, hexagon and special shapes in finished steel constitute the product of this company, and the catalogue covers an extremely wide variety of sizes and shapes. It is conveniently arranged to facilitate the ordering of any of the finished steel specialties listed, and gives rules and suggestions for selecting proper sizes. Appended are several pages of useful information and tables of matter important to machine designers, which are not easily located in books of reference.

Lathes.—Gisholt Machine Company, Madison, Wis. Loose leaf insert for catalogue. Illustrates motor driven Gisholt lathes, one of them being of 13-inch swing, which is the smallest size manufactured.

Electric Railroad Apparatus.—Westinghouse Electric & Mfg. Company, Pittsburgh, Pa. Circular No. 1127. Deals with control apparatus and trolleys for single phase railroad systems. The subject matter is treated under the headings hand control, multiple unit control, trolleys and line construction.

Mining Machinery.—Power & Mining Machinery Company, Cudahy, Wis. Two bulletins. No. 25 contains an illustrated description of the improved Niedermeyer classifying and concentrating jig for ores. No. 26 similarly deals with the McCully gyratory crusher.

Dynamos and Motors.—Crocker-Wheeler Company, Amper, N. J. Bulletin No. 61, superseding No. 46. Contains a detailed account of the construction of belt type direct current machines as made in sizes of from 10 to 275 horse-power.

Air Compressors.—Bury Compressor Company, successor to the Herron & Bury Mfg. Company, Erie, Pa. Bulletin No. 31. Gives dimension specifications of three new belt driven sizes of compressors recently added to the company's standard line.

Mono-Rail Cranes.—Sprague Electric Company, 527 West Thirty-fourth street, New York City. Leaflet. Shows illustrations of a mono-rail crane which is one of several installed for Spang, Chalfant & Co., Sharpsburg, Pa. One engraving shows the runway, the supporting structure and the crane in operation, and the other an enlarged view of the crane.

Generators.—National Electric Company, Milwaukee, Wis. Bulletin No. 358. Deals with belt driven alternating current generators, describing their construction and operation and giving specifications of sizes.

Labor Notes.

An Open Shop in the Structural Iron Trades.

The Building Trades Club of the National Association of Erectors of Structural Steel and Iron Work at a special meeting in New York Friday evening, January 19, 1906, decided to maintain the open shop in those trades throughout the United States. This action was the result of many conferences in different parts of the country in the past several weeks. It is the result of the national strike against the American Bridge Company and the New York strike of the Housesmiths' and Bridgemen's Union against the Allied Iron Trades Association and Post & McCord. The national association does 95 per cent. of the structural iron work in the country, both in shops and on buildings, and employs about 50,000 housesmiths on buildings and 150,000 men in the shops. The action taken thus affects 200,000 men, and means that the International Association of Bridge and Structural Iron Workers and all the local associations in various cities are no longer recognized. At the meeting in New York on January 19 delegates were present from Pittsburgh, Chicago, St. Louis, Milwaukee, Boston, Philadelphia, Minneapolis, Washington and nearly twenty other cities. The open shop resolution, which was carried by acclamation, was as follows:

Resolved, That the National Association of Erectors of Structural Steel and Iron Work stands for the open shop principle.

Open-shop notices will be posted at all the plants of the members of the association. The general sentiment of the employers is in favor of dropping the term "open shop" as vague and not fully descriptive, and to call such shops free shops.

A Labor Union Not Held for a Minority's Acts.

The Supreme Court of Indiana, in the case of the Karges Furniture Company against Amalgamated Woodworkers' Local Union No. 131, et al., has denied an injunction by which it was sought to restrain defendants from picketing the plaintiff's plant and from intimidating and interfering with plaintiff's employees. In March, 1903, the union decided to stop work at the various furniture factories in Evansville, Ind., the employers having refused concessions as to wages and shorter hours. The plants of the Karges Furniture Company and others were picketed. The officers of the union instructed the strikers to use no other method than peaceable persuasion to induce workers not members of the union to come out and co-operate in the strike. It was ordered that no striker should use violence, threat or intimidation, but that efforts should be confined to seeking the acquaintance of the non-union men at their homes and elsewhere and by argument endeavoring to induce them to join the union and leave their work. It was shown in the testimony that a minority of the members of the union disregarded the instruction and committed assaults upon non-union workmen, the result being that the remaining employees deserted the plaintiff's factory, bringing its business to a standstill temporarily. The court held that the fact that 14 of the 600 members of the union disregarded the express instructions of their officers and intimidated the plaintiff's employees is not of itself sufficient to condemn the union as a body. The decision declared that the law having granted workmen the right to strike to secure better conditions, grants them also the use of such means not inconsistent with the rights of others as are necessary to make the strike effective; that argument and persuasion to win support and co-operation from others are proper to either side provided they are of a character to leave the persons solicited feeling at liberty to comply or not, as they please.

Following a notice from the employees that they would ask for an increase of 11 per cent. in wages, a nine-hour day and recognition of the Machinists' Union, the Western Motor Works, Logansport, Ind., were closed down January 11, to forestall a probable strike. The pay-roll was quickly made up and 225 employees paid off. The principal product of the works is gasoline motors. It

also makes aluminum and gray iron castings. About 50 men in the foundry were kept at work. The company is also taking back any of the locked-out employees who make individual application. State Labor Commissioner L. P. McCormick is endeavoring to adjust the differences.

At Philadelphia in the United States District Court a temporary injunction was granted last week restraining the Iron Molders' Union of North America from interfering with the workmen of the Niles-Bement-Pond Company. A decision on the petition to make the injunction permanent is expected this week.

The withdrawal of the National Founders' Association from the "New York Agreement" by action of its Cincinnati convention of 1904 was chiefly on the ground that that agreement had been used by the Iron Molders' Union to fasten upon the foundries the union's ideas as to limitation of output and the other hamperings under which foundrymen were chafing. There may be some surprise among foundrymen, therefore, at the opinion expressed in the *Iron Molders' Journal* for January, New York correspondence. The New York business agent writes: "The New York Agreement was never looked upon favorably by many of our members, and I believe if the same agreement was put to a vote of the jobbing and machinery molders of our organization for their endorsement, and if they were left to their own judgment without advice in the matter, we would find that two-thirds of the vote would be in the negative."

The Philadelphia foundries which were affected by the molders' and coremakers' strike are now in better shape than at any time since it was inaugurated. All are in operation, and an average of about 65 per cent. of the aggregate tonnage of the plants is being produced. About 75 per cent. of the former number of employees are at work and the ability on the part of the foundrymen to get out castings is steadily improving.

British Iron and Steel Exports and Imports in 1905.

The foreign trade of Great Britain in iron and steel lines in 1905 was considerably in excess of that for 1904, both in value and in tonnage. The total declared value of the imports and exports of iron, steel and machinery in the two years was as shown in the table below:

	Imports.	Exports.	Total.
1905.....	£18,782,864	£74,254,000	£93,036,864
1904.....	17,203,725	65,197,000	82,400,000

The total importation of iron ores last year into the United Kingdom was 7,350,000 tons, against 6,100,000 tons for the previous year. Of the increase 1,116,000 tons came from Spain, which shipped 5,764,000 tons of iron ores and manganiferous ores to Great Britain last year. Some of the leading items in the export trade from Great Britain in 1905 and 1904 are, in gross tons:

	1904.	1905.
Pig iron.....	810,934	981,441
Ship, bridge and boiler plates.....	152,337	204,593
Galvanized sheets.....	385,403	407,021
Black plates.....	62,529	68,903
Tin plates.....	359,634	354,951
Wrought iron bars.....	115,636	134,198
Steel bars.....	122,930	151,809
Rails.....	525,371	546,644
Totals.....	2,534,774	2,840,560

The exports of pig iron to the United States last year were 172,789 tons, as against 56,027 tons in 1904. A considerable portion of the increase was ferro-manganese, hematite pig iron for Sparrow's Point and pig iron for Philadelphia, to enter into cast iron pipe for re-export.

British imports of pig iron in 1905 were 126,164 tons, against 130,408 tons in 1904; of steel structural shapes, 123,001 tons, against 122,954 tons, about 96,000 tons in each year coming from Belgium; of steel ingots, blooms and billets, 603,949 tons, against 522,706 tons, and of various lines of finished iron and steel products, 402,343 tons, against 427,372 tons.

HARDWARE

THE good work done in several directions by the American Hardware Manufacturers' Association is well known to the trade. Among its earliest and most effective efforts in the correction of trade abuses that bore disadvantageously upon the manufacturers was the endeavor to check, if not altogether to do away with, the too prevalent custom on the part of the jobbers of calling upon the manufacturers to pay for representation in their catalogues. The firm stand taken by the association at that time accomplished something in diminishing this usage, which was the source of so much perplexity and had become so much of a burden to the manufacturers. There are indications, however, that there is opportunity for further activities on the association's part, as the old practice has recently reappeared with its former virulence and vigor. It is, indeed, showing a suggestive vitality and enterprise in working along new lines.

In another column reference is made to the manner in which manufacturers are called upon to meet the expense, and possibly more than the expense, of jobbers' catalogues. Up to this time, so far as we are aware, the effort has been made by individual jobbers to secure payment from manufacturers for the representation thus given to their goods and the matter in this form was comparatively simple. It was settled without great difficulty, in view of the value to the manufacturer of his relations with the jobber in question. In the matter, however, to which we call attention in this issue the proposition is materially different. The request for payment for representation does not come to the manufacturer from a single jobbing house, but from an association of jobbing houses, with some of whom he has dealings, while the names of others are entirely absent from his books. He may question as to whether it is important that his products be represented in the manner proposed and whether the advantage will justify the very explicitly announced expenditure. The matter comes up to him with association indorsement. It is not an easy thing to turn down a proposition of this character. A serious dilemma confronts manufacturers who have any considerable trade with any of the jobbing houses concerned. It would require courage to turn down the proposition. Presumably many will yield to the pressure, it may be with expressions to the jobbers of the pleasure with which they co-operate in the plan, while inwardly they chafe. It is safe to say that not many of them will do it with good grace. Most of them will accede because they think they must.

We direct attention to this effort because it is an application on a large scale and by a strong association of a principle which should not receive encouragement in the trade. The matter of payment by individual manufacturers to individual jobbers is objectionable enough, but when a concerted effort is made on these lines under the auspices of a formidable organization it is much more serious. In a movement of this character we have an illustration of one of the dangers connected with trade associations, inasmuch as a strong organization is apt to use, or attempt to use, its power unwisely. The project too, under review, if carried into effect, will unquestionably work in the direction of increasing com-

petition, because if representation in the "Standard Heavy Hardware Catalogue" is valuable as a means of marketing the products of the manufacturers whose goods it covers, this will stimulate the efforts of those who are excluded from it, and perhaps encourage their direct relations with those who in the present order of things are the customers of the jobbing houses. An effort of this kind is to be regretted also on the ground that it tends to make relations between the jobbers and the manufacturers less cordial, as there is foisted upon the manufacturers an expense which they do not think they should be called upon to bear. There are perplexities and costs enough in connection with the making of goods and the sale of them to the jobbers, without manufacturers being obliged to bear any of the expenses which are immediately connected with the subsequent re-sale of the goods to the consumers or to the smaller merchants.

Condition of Trade.

Trade is moving along in normal volume and without any special developments of novelty or importance. Retail merchants generally report business very good, but affected in some lines by the mild and open winter which has so generally prevailed. Their customers generally are prosperous and are enabled more and more to purchase goods of the higher grade which contribute to their convenience and comfort. There is thus an opportunity for enterprising merchants to handle articles of the better quality and at the same time to increase the assortment of goods carried. The extent to which they are improving these opportunities is evident in the larger stocks and greater attractiveness of the goods carried in multitudes of stores. Both the manufacturers and jobbers are feeling the effect of this active business enjoyed by the retail merchant. The traveling salesmen of the jobbing houses are practically all in the field again and reports show that they are sending in good orders and well assorted. The jobbers, too, are purchasing liberally where their stocks need replenishing or in anticipation of the spring and summer business which will soon set in. The character of these orders reflects the confidence on the merchants' part in the future of business, as liberal quantities of goods are thus covered. With scarcely an exception manufacturers are working to their full capacity, many of them having little opportunity to accumulate as complete stocks as they would desire. There has been, however, within the past few years, a marked increase in the capacity of their plants and the fact that they are kept fully occupied under these conditions is a striking evidence of the tremendous volume of business which is doing. The tone of the market is excellent and prices continue strong. Changes are in fact taking place in many minor lines almost from day to day. Nearly all of these are in the direction of higher values.

Chicago.

Future delivery orders of Lawn Mowers, Ice Cream Freezers, Poultry Netting, Wire Cloth, Screen Doors and Windows and other hot weather accessories are now being placed with the Western jobbers in large volume. With the exception of Wire Cloth fair prices are prevailing and practically no concessions are being reported. The demand for staple lines for immediate delivery also continues good, and without exception the large jobbers

report the business placed thus far this month greatly in excess of the same period last year. The heavy buying for future requirements indicates that the dealers anticipate a continuation of the present heavy consumption and the outlook shows no signs of slowing up from the present rapid pace. Manufacturers' quotations on Wire Cloth are ruling comparatively lower to-day than at any time in the history of this industry. While 85 cents was the low point reached some years ago the cost of Wire was considerably lower at that time. The present price of Wire entering into the manufacture of this material is $6\frac{3}{4}$ cents per pound and Painted Cloth is selling at 90 cents for 100 square feet. When it was selling at 85 cents, the lowest price recorded, Wire was quoted at $4\frac{1}{4}$ cents. As approximately 10 pounds of Wire is required in the manufacture of 100 square feet of Cloth it will be seen that the present price is really 15 cents lower than the lowest quotation on record. In addition, the cost of Oils, Turpentine, &c., used in coating has increased anywhere from 15 to 50 per cent. In view of the low prices that prevailed on Doors and Window Screens in the past few years, present quotations to the trade are considered somewhat radical, but as yet have not interfered with the volume of business that should be closed at this season of the year. To some extent Galvanized Sheets are replacing Copper, on account of the high prices that have prevailed for the latter, and recognizing this decreasing consumption the recent reductions announced by the producers can be appreciated. Dealers are complaining somewhat on account of the slow movement of winter goods, due to the open weather, which continues to prevail throughout the West and Northwest. This, however, is favorable for building operations and the sale of goods in these lines is very heavy, the season considered.

NOTES ON PRICES.

Wire Nails.—The demand thus far during the present month has exceeded the same period last year, notwithstanding the large contracts placed before the last advance. Mills are busy shipping on contract orders; also in taking care of new business. The market is firm, and a heavy demand for the first three months of the year is anticipated. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days.

Carloads to jobbers.....	\$1.85
Carload lots to retail merchants.....	1.90

New York.—Local demand is somewhat uneven, while that from near-by points is more steady and larger. Building at points tributary to this city is being carried on vigorously, which is possible on account of the mild weather. Prices are fairly well maintained. Quotations on small lots from store are on the basis of \$2.10 per keg.

Chicago.—After careful investigation carried on since the first of the year and which extended throughout Western, Southwestern and Northwestern territory it has been definitely learned that stocks in the hands of dealers and jobbers are unusually low, the open weather having been exceptionally propitious for the distribution of goods. These low stocks indicate the consumption during the closing months of last year was even heavier than the mills anticipated and the buying movement during the first three months of this year for the spring trade is expected to be greatly in excess of the same period last year. New business is heavy and prices are being firmly maintained on the new basis recently established. We quote as follows: \$2 in car lots to jobbers and \$2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mill.

Pittsburgh.—Demand for Wire Nails continues heavier than usual at this season of the year and the mills are entering a large amount of new business. Buyers are specifying very freely on contracts placed some time ago for delivery up to March and shipments by the mills are unusually heavy. The market continues quite firm and it is possible there may be another advance in prices before very long. We quote Wire Nails at \$1.85 in carloads

to the large jobbing trade and \$1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

Cut Nails.—On account of the high price of Steel it appears that manufacturers would be justified in making an advance in prices, at the meeting of the association to be held next week. It is a question, however, whether they will see their way clear to make a change. Demand includes specifications on contracts and new business, the latter being fairly large for the season. Quotations are as follows: \$1.75, base, for carload lots, f.o.b. Pittsburgh; \$1.80 for less than carloads, f.o.b. Pittsburgh; \$1.90 for carload lots, on dock, New York; \$1.95 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

New York.—A moderate demand characterizes the market at this point, and prices are fairly well maintained. Quotations for small lots from store are on the basis of \$1.95 to \$2 per keg.

Chicago.—While the buying is not heavy, the demand is fairly well sustained considering the season. On account of the high prices ruling for raw material another advance is expected at the coming meeting of the association. Quotations are unchanged and firmly maintained as follows: Steel Cut Nails, in car lots, \$1.90 to \$1.95; less than car lots, \$2; Iron Cut Nails, \$2 to \$2.05.

Pittsburgh.—The mills are entering a fairly large volume of orders considering the season of the year, and shipments are quite heavy. We note a continued scarcity of Steel, which is interfering with operations of the mills making Cut Nails to some extent. Quotations are as follows: \$1.75, base, for carload lots, f.o.b. Pittsburgh; \$1.80 for less than carloads, f.o.b. Pittsburgh; \$1.90 for carload lots, on dock, New York; \$1.95 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

Barb Wire.—Orders are being received by the mills in fairly large volume, although a large number of contract orders had been placed previously. As soon as the roads settle so that farmers can get Wire it is expected that the demand upon merchants' stocks will be heavy. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$2.00	\$2.30
Retailers, carload lots.....	2.05	2.35
Retailers, less than carload lots.....	2.15	2.45

Chicago.—While jobbers and consumers placed heavy contracts with the mills previous to the last advance, nevertheless considerable new business is being booked and judging from the heavy specifications on contracts placed before the new year, jobbers' stocks for the spring trade are to be heavier than usual in anticipation of the tremendous consumption. Prices are firmly maintained, as follows: To jobbers, Chicago, car lots, Painted, \$2.15; Galvanized, \$2.45. To retailers, car lots, Painted, \$2.20; Galvanized, \$2.50. Retailers, less than car lots, Painted, \$2.30; Galvanized, \$2.60. Staples, Bright, in car lots, to jobbers, \$2.10; Galvanized, \$2.40; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—New business in Barb Wire is fairly large, some of the trade already placing orders for spring delivery. The wet weather in some sections of the country and the mild winter so far have made the roads very muddy and almost impassable and this is interfering with deliveries of Wire Fencing, &c., to some extent. The market is quite firm and there is some talk of an early advance in prices, but this is not officially confirmed. We quote Painted Barb Wire at \$2 and Galvanized at \$2.30 in carload lots to the large jobbing trade, with the usual advance of \$1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

Smooth Fence Wire.—New business and specifications on contracts are both heavy, particularly the latter.

Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.70
Retailers, carloads..... 1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....\$0.30	.35	.40	.45	.55	.65	1.05	1.15		

Chicago.—Specifications continue in excess of mill shipments and the largest consumers, principally Fence manufacturers, are using material as rapidly as the mills can make shipments. Little new business is being placed, as contracts were generally closed covering present requirements early last fall. We make the following quotations: To jobbers, \$1.85 f.o.b. Chicago in car lots, and car lots to retailers, \$1.90.

Pittsburgh.—Demand continues heavy, the mills entering a large volume of new business, while specifications on old contracts are coming in very freely. There is still a shortage of Steel and an inadequate supply of cars and this is interfering with operations of the mills and also of shipments. Prices are firm and it is possible an early advance may be made. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.70
Retailers, carloads..... 1.75

The above prices are for base numbers, 6 to 9.

Conductor Pipe.—Following the recent advance in Galvanized Sheets, prices recommended by the National Conductor Pipe Association on Galvanized Steel and Iron Conductor Pipe, Eaves Trough, Ridge Roll and Formed Valley have sustained a general advance of 2½ per cent. It is also announced that undefined territories will take the prices for central territory, with freight allowed to any one of the following points through or nearest which shipment must pass to reach destination: Joplin, Mo., Nevada, Mo., Kansas City, Mo., St. Joseph, Mo., Omaha, Neb., Sioux City, Iowa, St. Paul, Minn., Minneapolis, Minn. Following are the prices now in force, the discounts used being those ruling at point of destination, not point of shipment:

	Territory.			
	Eastern. Per cent.	Central. Per cent.	Western and S. W. Per cent.	South- western. Per cent.
Conductor Pipe:				
Galvanized Steel, standard sizes and gauges.....	70-10	70-2½	65-10	62½-7½
Galvanized Steel, irregular sizes and gauges....	75-7½	75	70-10	70
Galvanized Charcoal Iron, stand. sizes and gauges....	60-7½	60	50-10-2½	50-5
Galvanized Charcoal Iron, irreg. sizes and gauges....	75-7½	75	70-10	70
Copper, 14 and 16 ounce....	50	40-10-5	47½	40-10
Eaves Trough:				
Galvanized Steel, standard sizes and gauges.....	80-2½	75-10-7½	70-20-7½	70-20
Galvanized Steel, irregular sizes and gauges....	75-7½	75	70-10	70
Galvanized Charcoal Iron, stand. sizes and gauges....	70-7½	70	60-15-2½	65-2½
Galvanized Charcoal Iron, irreg. sizes and gauges....	75-7½	75	70-10	70
Copper, 14 and 16 ounce....	50	40-10-5	47½	40-10
Mitters, End Pieces and Drops:				
Galvanized Steel.....	35	35	35	35
Galvanized Charcoal Iron. List net.	List net.	List net.	List net.	List net.
Plain Ridge Roll and V. Ridge Cap:				
Galvanized Steel.....	80-5	80	75-10-2½	75-5
Galvanized Charcoal Iron	70-7½	70	60-15-2½	65-2½
Formed Valley:				
Galvanized Steel.....	70-2½	65-10-2½	60-10-7½	60-10
Galvanized Charcoal Iron	50-10-7½	50-10-2½	50-5	40-10-5
Elbows and Shoes:				
Galvanized Steel, Charcoal Iron or Tin:				
Standard gauge.....	60-10	60-10	60-10	60-10
No. 26 gauge.....	50	50	50	50
No. 24 gauge.....	25	25	25	25
No. 22 gauge.....	10	10	10	10
Special or hand-made....	60-10	60-10	60-10	60-10
Copper.....	50	50	50	50
Wire E. T. Hangers.....	33 1-3	33 1-3	33 1-3	33 1-3
Steel Hangers:				
Standard list.....	20	20	20	20

Stove Bolts.—While conditions in the market continue very unsatisfactory to manufacturers of Stove Bolts, it is doubtful if competition is as sharp as it was a few weeks ago or if prices remain on the extreme low level prevailing at that time. It is asserted that some important manufacturers who were most influential in putting prices down have been making little or no effort

to secure business at bottom figures. Others have consistently refused to meet the market and have, it is said, been able to book good orders at more remunerative prices by guaranteeing prompt delivery. Indeed there is reason to believe that deliveries on the part of producers actively soliciting business at the lowest quotations have been so slow as to cause their customers much annoyance and in some cases necessitate their supplying their immediate needs at a premium from other sources. Good judges express the belief that the extreme point of demoralization is passed and the situation is beginning to clear.

Dripping Pans.—An advance in the price of Dripping Pans has been put into effect by the leading manufacturers, so that the price to the fair retail trade is now represented by the discount of 65 and 10 per cent.

Covert Mfg. Company.—The Covert Mfg. Company, Troy, N. Y., has issued revised discounts on its extensive line of goods. Several advances are to be noted. Its complete list of quotations to the general trade is as follows:

	Discount.
Derby Open Eye Snaps.....	30 and 2%
Derby Swivel Snaps.....	45%
Yankee Snaps.....	30 and 2%
Derby Snaps.....	30 and 2%
Jockey Snaps.....	35%
Covert Patent Snaps.....	45%
Trojan Snaps.....	45%
High Grade Snaps.....	45%
Baby or Bag Snaps.....	30 and 2%
Trojan Open Eye and No. 44, No. 46, No. 48 Snaps.....	45%
No. 5, Open Eye Giant Snap.....	45%
Yankee, Open Eye Snaps and Derby Trace Carrier.....	30 and 2%
Snaps and Thimbles, also Thimbles.....	45%
Yankee Round Eye Chain Snaps.....	30 and 2%
Covert Round Eye Chain Snaps.....	45%
Yankee Round Eye and Loose Swivel Snaps.....	30 and 2%
Covert Round Eye and Swivel Snaps.....	45%
Yankee Martingale Snaps.....	30 and 2%
Yankee Double Snaps.....	30 and 2%
Derby Bit Snaps.....	45%
Covert Double Bolt and Steel Spring Snaps.....	45%
Yankee Roller Snaps.....	30 and 2%
High Grade Roller Snaps.....	45%
Rope Snaps.....	40%
Yankee Breeching Snaps and Trace Snaps.....	30 and 2%
Breast Strap Buckle Snaps.....	40%
Bull Snaps.....	45%
Yankee Center Breast Chain Snaps.....	30 and 2%
Breast Strap Protectors.....	45%
Balling Irons.....	45%
Hitching Weights.....	40%
Hitching Posts.....	30 and 2%
Rod Post Hitchers.....	40%
Stall Hitchers.....	30 and 2%
Breech End Irons.....	45%
Swivel Cock Eyes.....	45%
Picket Pins.....	45%
Strap Eyes.....	45%
Rubber Interfering Boots.....	40%
Safety Gate Hooks.....	40%
Steel Carriage Jacks.....	45%
Steel Wagon Jacks.....	45%
Auto. Screw Jacks.....	30 and 2%
Breast Chains.....	40%
Halder Chains.....	40%
Heel Chains.....	40%
Rein Chains.....	40%
Stallion Chains.....	40%
Stall Chains.....	40%
Cart Breeching Chains.....	40%
Breeching Side.....	40%
Post Chains.....	40%
Jute Halters.....	45%
Sisal Halters.....	33 1-3
Hemp Halters.....	45%
Cotton Halters.....	45%
Web Halters.....	45%
Jute Hammock Ropes.....	45%
Sisal Hammock Ropes.....	33 1-3
Cotton Horse Ties.....	45%
Hemp Horse Ties.....	45%
Jute Horse Ties.....	45%
Sisal Horse Ties.....	33 1-3
Cotton Cattle Leaders.....	45%
Hemp Cattle Leaders.....	45%
Jute Cattle Leaders.....	45%
Sisal Cattle Leaders.....	33 1-3

Door and Window Screens.—It is a fact perhaps not generally known to all the retail trade, that the Continental Company, Detroit, Mich., which is selling the product of nearly all the Screen Door and Window Screen factories, has established 602 distribution points throughout the United States. The orders received from retailers by the jobbers are assembled at the factories in cars which go to these distribution points, and the goods, excepting those for retailers located at these distribution points, are then re-shipped to tributary towns and villages. The carload rate of freight from factories is usually less than one-half the cost of freight on less than carloads. By the use of these distribution cars, the company remarks, the retailers save from 25 cents to \$1.50 per dozen on Screen Doors and from 10 to 50 cents per dozen on Windows and Window Screen Frames.

These cars go forward during the month of February, although additional cars to some points may be made up later, if local demand warrants. Orders should be in the hands of jobbers and forwarded to factories early enough so that the factories shall have sufficient time to get together the assortment necessary for each car. Notwithstanding the condition of the Wire Cloth market, lumber conditions are such as to prevent any reduction in the price of Screen Doors during the present season, and prices on Screen goods are very firm.

Rope.—For the season, demand is reported as fair. The outlook for spring business is regarded by manufacturers as encouraging. The market is fairly well maintained and quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9½ cents; No. 2 quality Sisal, 8 cents per pound.

Window Glass.—A meeting of Window Glass manufacturers was held last week, at which the committee appointed to arrange a plan for organization of the proposed National Window Glass Company made their report. The principal feature of the report was to the effect that a minimum of 1800 pots should be necessary to the formation of the organization. Reports are that there were less than 1200 pots signed at this meeting under the \$300 per pot forfeiture plan. The pots which signed are said to represent only about half the Window Glass making capacity of the country, so that the outlook for perfecting the organization is not regarded as encouraging. It will be remembered that 1600 pots were reported as agreeing at the previous meeting to join the organization whereas only 1356 pots were represented at the last meeting, which showed a considerable falling off. It is understood that demand is large at the factories and that stocks in jobbers' hands are light. Manufacturers are credited with having about 1,500,000 boxes on hand, about equally divided between hand and machine factories. If the required number of 1800 pots cannot be secured to agree to the forfeiture plan it is probable that the whole plan will have to be abandoned, without any beneficial results to manufacturers.

Linseed Oil.—Transactions are confined to small lots for immediate requirements, by small buyers. Large buyers have contracts covering some time to come. While there have been some inquiries as to futures, there is considerable difference as to prices between the views of buyers and crushers, and it is reported that some of the latter refuse to accept any future business. The market is strong for prompt Oil at unchanged prices. Quotations are as follows: Out of town Raw, 42 to 43 cents; City Raw, 44 and 45 cents per gallon; Raw, Calcutta seed, 65 cents per gallon. Boiled Oil, 1 to 2 cents advance over Raw.

Spirits Turpentine.—Demand at this point has been light throughout the week under review, with a fairly strong market. Prices have receded about ½ cent per gallon. New York quotations are as follows, according to quantity: Oil Barrels, 67½ to 68 cents; Machine Made Barrels, 68 to 68½ cents per gallon.

S. F. BOWSER & CO.

S. F. BOWSER & CO., Fort Wayne, Ind., have issued a new catalogue No. 4, referring to Oil Storage Systems and Oil House Equipments, including adjustable measure Oil Cabinets, direct connection and long distance Oil Storage Outfits, Navy Oil Tanks, Underground Storage Tanks, &c. With it are being distributed smaller catalogues: No. 1, referring to self measuring Oil Tanks; No. 2, referring to self measuring Gasoline Tanks, and No. 3, referring to self measuring factory, railroad and marine Oil Cabinets, for handling all classes of lubricating and other oils.

THE ARCADE MFG. COMPANY, Freeport, Ill., has increased its capital stock from \$125,000 to \$200,000 for the purpose of making enlargements in its plant and adding equipment which will permit of greatly increased output.

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

The Early Manufacture of Rules.

To the Editor: We cannot refrain from congratulating you upon the success of your paper and its immense growth during the past 50 years of its existence. Our Mr. Stephens recalls vividly to mind your early publications at Middletown, N. Y., and remembers distinctly the time of your removal to New York City, it being the year when his father and himself removed the business of Stephens & Co. from New Hartford to Riverton, in which place it remained until it consolidated its interests with that of the H. Chapin's Son Company in 1901, when it returned to the place of its birth, which occurred in 1854, and also returned to its original fold, for the Messrs. Stephens mentioned above in that year left the employ of H. Chapin and started up in business by themselves not a stone's throw from Mr. Chapin's factory. Here they remained for five years, when they removed to New Hartford to get into larger quarters, and again after five years' operation there they removed to Riverton.

We can naturally appreciate your pride in the history that you have helped to make during the last half century, and therefore feel confident that you will pardon us when we speak with pride of the 30 years we can add to this number, for in 1826 the business of the Chapin-Stephens Company was established here in Pine Meadow by Hermon Chapin, who was identified with the business up to the time of his death in 1866. Edward M. Chapin, son of Hermon Chapin, continued to carry it on successfully until his death in 1896. For a year or so the business was carried on as an estate by the sons of Edward M. Chapin, when a stock company was formed under the name of the H. Chapin's Son Company. In 1901 consolidation was effected with Stephens & Co., and the name changed to the Chapin-Stephens Company, the style thus combining the names of the two oldest manufacturers of Boxwood and Ivory Rules in the United States. Since that time many improvements have been made about the factory to increase the production of Planes, Levels, Gauges and numerous other goods manufactured by us.

When the business was established in 1826 by Hermon Chapin it was for the manufacture of a complete line of Wood Bench and Molding Planes, and strange as it may seem to many that while the advance of the country during these last 80 years has been such that many machines have been produced for supplanting the use of the Plane, and that innumerable patents have been taken out for Iron Planes of every description, still our company at this time is enjoying a larger business in the Plane department than for years. Our products are now being shipped not only to every State in the Union, but to almost every known port in the world.

THE CHAPIN-STEPHENS COMPANY.

PINE MEADOW, CONN., January 19, 1906.

Improved Tone and Methods in Business.

From a recent letter of E. B. Pike of the Pike Mfg. Company, Pike, N. H., we make the following interesting extracts which refer to the changes which have taken place in business during the past 40 or 50 years:

I made my first trip selling goods to the Hardware trade 44 years ago. I drove with a pair of horses through northern New Hampshire and Vermont and into the Province of Quebec, Canada, selling Scythe Stones. The changes and the development of the Hardware business since that time have been wonderful, not only in the increase in business, but in the methods and principles of doing business. The business methods of to-day are on a much higher plane, and broader and cleaner and more in the line of square dealing in every way than they were 30 to 40 years ago. Then every man was more for

himself, and he considered his competitor his enemy, and tried in every possible way to get the advantage of him.

When the Hardware merchant went to the city in those days the salesmen of the different firms would watch for him at the hotel. They made it a point to entertain him and give him a good time. Goods were bought more largely on a friendly basis then than now. Goods were then sold largely at net prices. To-day almost every buyer is a thorough business man. While he treats the salesmen courteously he does not tell them the prices of their competitor and does not ask them at what prices they are selling his competitor or others. The buyer depends upon his own business judgment. He gives you a good, straight written order, stating the terms plainly, and expects the manufacturer to supply just what he represents.

In our own business markets have changed much in the past 50 years. Then our sales were almost entirely on Scythe Stones, and through New England and the Middle States. The adoption of Mowing Machines has reduced the use of Scythe Stones very materially, but our markets have so broadened over the United States and Canada and Europe that trade has greatly increased, and we have added so many other lines of abrasives, like Oil Stones, Razor Hones, Emery and Corundum Wheels and other abrasive articles, that to-day our sales are probably 100 times greater than they were 50 years ago.

WISCONSIN RETAIL HARDWARE ASSOCIATION.

All arrangements have been completed for the annual meeting of the Wisconsin Retail Hardware Association at Milwaukee, February 7 and 8, and the outlook points to a very large and enthusiastic gathering and an interesting and instructive convention. W. P. Bogardus, president of the National Association, will be present and will make an address. Others who are on the programme to make addresses or read papers are: Henry Grimshaw of Elroy, "Co-operative Buying"; N. Kawin of Chicago, "Mail Order Business"; C. A. Dewey of Kenosha, "Plate Glass Insurance"; H. L. McNamara of Jonesville, "Loyalty," and Emil Teitgen of Manitowoc, "Benefits of Local Associations." An interesting lot of practical questions have been elaborated for discussion through the medium of the Question Box as opportunity offers during the various sessions.

DEATH OF WALTER J. LEAVENWORTH.

WALTER J. LEAVENWORTH, treasurer and general manager of the R. Wallace & Sons Mfg. Company, Wallingford, Conn., manufacturer of silver ware, died January 19 of pneumonia, aged 60 years. He was a native of Roxbury, Conn. He was elected treasurer and general manager of the R. Wallace & Sons Mfg. Company at the time of the incorporation in 1877. He was a founder and for many years the president of the Wallingford Gas Light Company and founder and president of the First National Bank of Wallingford. He was colonel of the Second Connecticut Regiment of militia from 1885 to 1889. He held many public offices, including the court of burgesses, chairman of the Board of Water Commissioners, school committee, and representative to the Legislature for two terms. He leaves a widow, two sons and a daughter.

ANDREW B. HENDRYX COMPANY.

A HANDSOME catalogue for 1906 is being distributed by Andrew B. Hendryx Company, bronze and brass founder, New Haven, Conn. The book is profusely illustrated and substantially bound in red leather. Goods listed include complete lines of bird and animal Cages, Cage specialties; Chain: bronze, brass and iron, curb, safe, ladder, plumbers', safety, single and double; Picture Wire: bronze, brass and tinned; Fishing Tackle: Reels, Artificial Bait, &c.

DEATH OF H. D. HULL.

H. D. HULL, head of the wholesale and retail Hardware firm of H. D. Hull & Co., Troy, N. Y., died on Tuesday, January 23, in the seventy-sixth year of his age. He had been identified with the business for more than half a century.

Mr. Hull was the first president of the New York State Association of Retail Hardware Dealers, which was organized at Syracuse in 1902. During his long and suc-



H. D. HULL.

cessful career he had witnessed many changes in the trade. He was a man of strong convictions, unblemished character and possessed of many sterling qualities, and was held in high esteem by friends and acquaintances, both in and outside of trade circles. Mr. Hull's health was doubtless greatly affected by the death of his wife, December 29 last, whom he married 50 years ago, and to whom he was devotedly attached.

DEATH OF GORHAM J. COTTRELL.

GORHAM J. COTTRELL, founder of the Cottrell Hardware Company, Quincy, Ill., and one of the city's best known and most highly esteemed citizens, died from pneumonia on the 9th inst. Mr. Cottrell was born on a farm near Fredonia, N. Y., May 11, 1830. After serving as a clerk in a store at Mayville, N. Y., for four years, and engaging in a general merchandise business at Fredonia for several more, Mr. Cottrell decided that the West was a more promising field, and in 1856 removed to Illinois and first settled in Macomb. Here he embarked in the Hardware business in partnership with his brother, Charles S. Cottrell. The business flourished from the start. The Burlington road was being opened up and Quincy was forging fast to the front. So a branch store was opened in the latter city by Mr. Cottrell, his brother remaining in charge of the Macomb establishment.

Mr. Cottrell was a man of much executive ability and great capacity for work. Aside from the Hardware business, he invested his growing capital in many other lines and he was generally found active in every enterprise promoted for the city's good. He was president of the Quincy Hotel Company, owner of the Newcomb, and was a director in the Comstock-Castle and Channon-Emery Stove companies. He was interested in Quincy banks and in several other commercial and industrial enterprises. His interest in most cases was active as well as advisory, and he was recognized for the value of his judgment and for his keen insight into commercial affairs. His probity and integrity were never questioned and he was respected by the new generation of business men as well as by the old.

F. E. Gieseke, Neligh, Neb., has sold his Hardware business to Housh & Lee.

TRADE ITEMS.

W. D. BIGGERS & Co., St. Louis, Mo., general sales agents of Hardware, Iron, Steel, Metal and Railway Supplies and representatives of Acme Handle Company, Bierne, Ark., and Standard Truck & Forging Company, St. Louis, have moved to more commodious quarters at 508 Merchants-Laclede Building, St. Louis.

JOHN A. GREGG, Burlington, Iowa, has just issued a pamphlet in which a list of the manufacturers represented by him to the jobbing trade of the Middle West, together with an enumeration of their products, is given. Space for memoranda is also supplied in the booklet. Among other manufacturers represented by Mr. Gregg are the Adams Company, the Irwin Auger Bit Company, Benbow-Brammer Mfg. Company, O. P. Schriver & Co., Baker-McMillen Company, F. D. Kees Mfg. Company, Warren Axe & Tool Company, Bonney Vise & Tool Works, Hay-Budden Mfg. Company and E. D. Clapp Mfg. Company.

THE fire at the works of the Ames Shovel & Tool Company, North Easton, Mass., destroyed only a portion of what is termed the handle shop. The loss is estimated at about \$30,000, two-thirds of which was upon Handle stock, the balance being on machinery and buildings. The company expects to be finishing its handles again in about 10 days. In the meantime making and shipping goods is going on just as if no fire had occurred.

On the 7th inst. fire badly damaged the retail building of Treman, King & Co., Ithaca, N. Y.,. Four days later the loss had been adjusted, on stock \$16,518.89, and on tools and fixtures, \$975. The building was not owned by the company. The fire did not at all affect the wholesale stock, which occupies other buildings, so that the jobbing business is being carried on as usual. The retail department will probably be in confusion for another month, as some extensive changes are contemplated.

THE business of Nicols, Dean & Gregg, St. Paul, Minn., which has been conducted as a partnership since 1855, has incorporated with a capital stock of \$500,000, the following officers being elected: President, J. Ross Nicols; vice-president, J. A. Gregg; secretary and treasurer, Wm. J. Dean. The company deals in Iron, Steel and Heavy Hardware.

At the annual meeting of the Simmons Hardware Company, St. Louis, statements from the president and treasurer showed that the company's business for 1905 was very satisfactory and that the prospects for the present year were especially encouraging. F. J. Semple and G. W. Simmons were added to the list of vice-presidents, and William Enders and Oliver F. Richards were elected secretary and assistant secretary, respectively. No other changes were made in the officers.

THE former officers of the Norvell-Shapleigh Hardware Company, St. Louis, were re-elected at the annual meeting recently held, as follows: S. Norvell, president; R. W. Shapleigh, first vice-president; W. G. Yantis, second vice-president; H. B. Gordon, secretary, and A. L. Shapleigh, treasurer. Last year's sales showed a very substantial increase, especially during the last half. The present year is said to be making a good start, with all conditions indicating a brisk business for the first six months.

Two employees of Peck & Mack, 12 Murray street, New York, have been arrested in connection with some mysterious robberies which have been going on in that store for several months. The thieves had the co-operation of a truckman and had stored most of the goods in Brooklyn, with a view to starting a store. Thus a considerable portion of the stuff was recovered.

Boonshot Hardware Company, Petersburg, Ind., has been incorporated to succeed Shawhan, Boonshot & Co. The business will be conducted on an enlarged scale along its present lines, which include Hardware, House Furnishing Goods, Building Materials, Wire Fencing, Paints, Vehicles and Agricultural Implements.

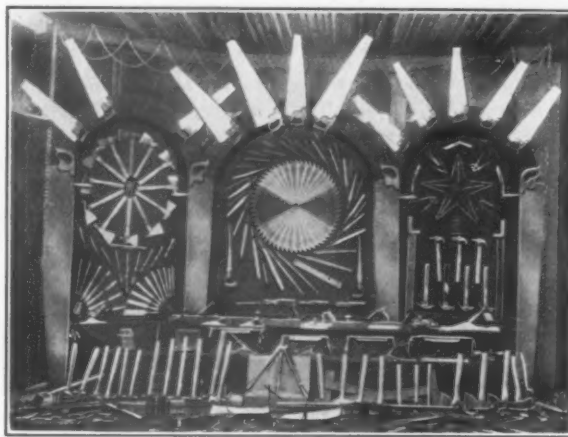
TRADE WINNING METHODS

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

MISCELLANEOUS TOOL WINDOW.

THE tool exhibit illustrated herewith was prepared by E. N. Howell Hardware Company, Dixon, Ill. It brought as many direct sales as any window with which the company has had to do. A notable fact in connection with the sales was that a large proportion of the buyers were people not interested in tools as a livelihood.

The arches were made of boards covered with black cloth. The panels behind were also boards covered with



Miscellaneous Tool Window.

the same material. The panels being separate from the arches it was possible to lay them flat on the counter before putting them in the window, placing the tools as desired on the boards and then securing them in position. This was much easier than putting them in place, with the panels upright. Woodworking tools were shown in the background and on the steps, pipe fitters' tools on the right of the window floor, machinists' tools in the center and masons' and bricklayers' tools on the extreme left.

STATE FAIR EXHIBIT.

THE KNIGHT-MARSHALL-HOWE HARDWARE COMPANY, Sedalia, Mo., made a very fine exhibit of some of the lines handled by the company at the last Missouri State Fair. The exhibit occupied a large space. Special prominence was given to the lines of Stoves sold by the company, some of those shown having been awarded a gold medal at the Louisiana Exposition. The attractive display of Saws made by E. C. Atkins & Co. at the last annual convention of the Southern Hardware Jobbers' Association was also given a conspicuous position. The company's own brand of goods, "Old Bullion," was shown in connection with Tools, Pocket Cutlery and Enamelled Ware. The exhibit as a whole proved a magnet for visitors and was the subject of much favorable comment.

The T. S. Carter Hardware Company, Weatherford, Texas, after a year of business has been reorganized and incorporated under the new name of the Carter-Ivy Hardware Company. The officers of the company are: W. T. Ivy, president; T. S. Carter, vice-president, and W. T. Carter, secretary and treasurer.

The White Hardware Company, Stanford, Texas, has incorporated with a capital stock of \$15,000, to conduct a Shelf and Heavy Hardware, Stove, Implement, Paint, Sporting Goods and Harness business.

The Proposed Catalogue of the Western Heavy Hardware Jobbers.

THE proposition that manufacturers are to defray the cost of jobbers' catalogues comes up in a new and decidedly interesting form in connection with the activities of the Heavy Hardware Jobbers' National Association. The scheme is thus outlined in a circular letter of the secretary of the association, which was issued officially under date October 7, 1905:

The Executive Committee of the Heavy Hardware Jobbers' National Association, which association consists of the 35 leading jobbers in the territory extending from the Ohio line on the east, Missouri River on the west, north and south from Duluth to St. Louis, has authorized the publication of a Standard Heavy Hardware Catalogue for its members, which will be the only Standard Heavy Hardware Catalogue published.

The estimated circulation will be 50,000 copies, the distribution to be made by the association from lists of customers to be supplied by the members, after eliminating all duplicate names. By this arrangement every consumer and user of the materials catalogued who is located in the territory named will receive but one book from which to order his requirements. This plan will greatly simplify the catalogue proposition and the advantages to all are plainly obvious.

The committee is now engaged in selecting the lines which in its opinion should be catalogued. At the present writing no decision has been made as to whose lines will be represented. The committee is compelled to use considerable care in the selection of the contents, as all goods shown must be standard and it follows that if your line is represented it must naturally be regarded by the users and consumers as standard.

The value to the manufacturer who is represented in this catalogue in our estimation will be at least \$500 per page. The size of the pages will be 8 1/4 by 11 inches, trimmed. Provided the committee decides to show your — (here the products made by the manufacturer addressed are named) kindly give us an idea of how many pages of this size it would take and what proportion of this expense you feel you could stand. Other things being equal, the committee would without doubt be influenced to some extent by the liberality of your donation. The sum you contribute will go to the credit of the jobbers, as the entire cost of the catalogue will be pro-rated among them. In arriving at your decision remember that the catalogue is in every sense a manufacturers' and not a jobbers' catalogue, as no jobbers' name will appear on any of them. This being the case, it is fit and proper that you should share the expense. You will also need to consider the large circulation and that the book is intended for use for at least six years. Finally, you do away entirely with solicitations for contributions from individual jobbers.

Please give this matter the early attention and careful thought which it deserves and upon receipt of your reply we will write you in further detail.

Assuming that this scheme might be satisfactory to the jobber, the prime question is as to how it is related to the interests of the manufacturer. The proposed catalogue certainly will not take the place of the manufacturer's individual catalogue or price list, for it would be impossible adequately thus to show the leading lines in a book of the size described, and manufacturers have other uses for their catalogues beside with the enterprising jobbers who are interested in this project. The circular letter given above leaves it an open question whether one manufacturer or many in the same line are to be represented, but other advices indicate that rivals in business will be brought together, so that a given manufacturer in a line to be exploited will find himself cheek by jowl with as many competitors as may purchase space. Some established trade is likely to be sacrificed

by this juxtaposition and some manufacturers have expressed themselves as reluctant to take the chances. An interesting question, too, comes up as to the principles on which lines of goods will be chosen for representation in the volume, and whether the amount of space occupied or the size of the manufacturer's check will have anything to do with it.

A difficult task is laid upon the already overburdened jobbers' salesman, who is expected to explain to the retailers, blacksmiths or machinists the advantages of the special goods represented in the catalogue for which his house is in a position to expect orders. There will be a good many pages in the volume which the salesman would prefer his customer should not see.

In view of these and other practical objections manufacturers, having recovered from the surprise, not to say the dismay which they felt when the proposition was first broached to them, frankly express themselves as looking with little favor on the scheme. While some at least learned subsequently that the terms were somewhat elastic, the suggestion of \$500 a page was startling, even to manufacturers who have become somewhat calloused by similar appeals from individual jobbing houses. If they acquiesced and consented to participate it is more because they disliked to refuse, or did not dare to refuse, than because on legitimate business considerations they deem it advisable to take the space. Even though the project be deemed impracticable and the representation not worth at all what it costs, it is easier and perhaps wiser to surrender than to argue and possibly to alienate.

There seems to be some question as to whether the catalogue will suit the jobbers. It is not proposed to make it elastic by having it of the loose leaf style. In the period of six years which is named by the committee in charge as the probable life of the book many goods will become obsolete and many new and improved types will be on the market. It is explicitly stated that no jobber's name will appear in any of the books, a feature which would seem to rob the volumes of much of their usefulness as a means of cultivating trade for any given jobbing house. The catalogue will necessarily on the plan proposed contain many goods not carried by many of the jobbers. It is easy to see the resulting confusion and perplexity, alike for those who are supposed to issue the catalogue and those who make use of it. The jobbers identified with the association seem to recognize these difficulties, for so far, we believe, only 10 or 12 of the 35 jobbers in the association are committed to the adoption of the book. Others postpone a decision on the ground that they are waiting until the existing editions of their catalogues are exhausted, thus obtaining an opportunity to observe the working of the project before committing themselves to it.

A feature of the solicitation that should not be overlooked is the significance of the sentence beginning, "Other things being equal the committee would without doubt be influenced to some extent by the liberality of your donation, &c." This word "donation" is more wisely chosen than the committee knew. What is paid by the manufacturer is not the equivalent for value received, but a gift to the jobber. So far as the payment is justified as a business proposition it is on the ground, not that the representation in the catalogue is worth what it costs, but that it is perhaps good policy to incur the expense rather than disappoint, displease and perhaps alienate important customers.

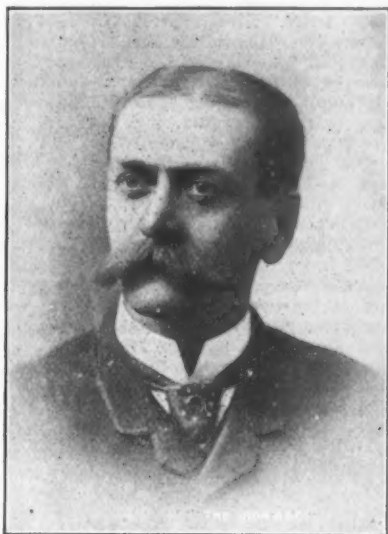
These are considerations, however, to which high-minded business men would dislike to appeal were it not that the practice of making the manufacturers pay for jobbers' catalogues is so deep seated in the trade. It is to be regretted that it receives the formal and official endorsement of an important association of honorable and influential merchants.

THE HOWE SCALE COMPANY, 341 Broadway, N. Y., is distributing a perpetual calendar in the form of an easel about 6 inches high by 4 1/2 inches wide. It can be conveniently adjusted in accordance with directions printed on the back.

NEW ENGLAND IRON AND HARDWARE ASSOCIATION'S BANQUET.

ABOUT 100 gentlemen attended the annual banquet of the New England Iron and Hardware Association at Hotel Vendome, Boston, on Tuesday evening, 23d inst. The arrangements for the banquet were in charge of John T. Boyd and were admirable in every respect.

A reception was held previous to the dinner which was in charge of the following: R. M. Boutwell, chair-



CHARLES F. BRAGG.

man; Allan J. Chase, Harry L. Doten, Charles F. Dowse, William P. Hill, Arthur C. Harvey, Albert H. Inman, Luther Little, Wilbur Sargent Locke, Oscar A. Shepard and Harry W. Waite.

The principal guests of the association were Hon. William Alden Smith, who spoke on "America's Industrial Policy;" Rev. Willard Scott, whose topic was "Enterprise and Comradeship," and Col. H. P. Bope, who discussed "Organization, Policy and Trade Agreements." Others occupying seats at the guest table were Hon. John F. Fitzgerald, Mayor of Boston; Hon. Samuel A. Powers,



R. M. BOUTWELL.

Samuel A. Bigelow, Charles E. Adams, Andrew G. Webster and William P. Hill.

Many prominent men connected with the Hardware and metal interests of New England were present and the seating arrangements were such that congenial spirits were placed near together, thus contributing to the pleasure of all during the progress of the banquet.

A pleasant feature of the dinner was the singing, led

by former President Oscar Shepherd. Popular songs were given with a will between courses and music by the orchestra at intervals during the evening.

The Addresses.

Acting as master of post prandial exercises, the president of the association, Chas. F. Bragg of Bangor, Maine, after a brief speech of welcome, first introduced Hon. Wm. Alden Smith, member of Congress from Michigan, who gave a very acceptable address on "America's Industrial Policy," pleading for a continuance of the present tariff policy under which the country has prospered. The next speaker was Hon. John F. Fitzgerald, Mayor of Boston, who spoke of his hopes and plans for a better, bigger and busier Boston. Col. H. P. Bope, first vice-president of the Carnegie Steel Company, was the next speaker. Colonel Bope traced the history of great organizations and policies, and described the nature and value of trade agreements. Rev. Willard Scott of Worcester, Mass., entertained the company with good stories and an eloquent address.

Those Present.

Following is a list of those present at the dinner:

R. Van Buskirk,	John H. Robbins,
J. T. Powers,	A. H. Decatur,
H. W. Marshall,	Thomas H. Baldwin,
M. A. Chandler,	Edgar Reed,
A. G. Bowman,	William A. Hopkins,
D. F. Barber,	L. H. Pease,
H. S. Hart,	N. A. Gladding,
E. Loring Richards,	J. F. Carey,
J. D. Rawles,	Herbert W. Blanchard,
J. H. Sayward,	Fred L. Greely,
F. M. Smith,	George W. Herrick,
B. A. Hawley,	Harry W. Waite,
Charles A. Burditt,	William A. Jackson,
Charles E. Wetmore,	G. W. Ranlet,
James A. Munroe,	George T. Coppins,
Charles B. Parsons,	George C. Libbee,
Joseph H. Williams,	William H. Bense,
E. E. Gallagher,	G. L. Bowen,
L. W. Thompson,	Charles C. Lewis,
F. F. Hodges,	E. P. Sanderson,
R. N. Peck,	Frank W. Brigham,
F. B. Dana,	Luther Little,
Alex. Stanley,	George P. Bullard,
L. C. Carter,	W. S. Hickey,
T. H. Taylor,	Charles H. Parker,
William Chamberlain,	Hayward C. Dodge,
H. H. Whittemore,	Allan J. Chase,
Albert E. Martin,	Col. Thomas F. Doherty,
R. B. McKim,	P. F. Burke,
George M. Gray,	L. B. Morris,
Peter Gray,	A. H. Inman,
W. H. Dunning,	R. W. Baker,
H. E. Whitney,	George J. Mulhall,
Henry A. Brown,	A. B. Marble,
Harry C. Disston,	A. C. Harvey,
Charles F. Dowse,	F. E. Bragg,
Charles King,	C. W. Henderson, Jr.,
W. E. Stevens,	Joseph N. Bacon,
George A. Libby,	E. L. Davis,
Garrett W. Scollard,	C. L. Titus,
William Q. Wales,	G. Irving Rice,
Lester F. Thurber,	Robert E. Hofer,
I. Frank Stevens,	Walter C. English,
Charles E. Johnson,	Edmund Noble,
George H. Wightman,	William P. Hill,
Wilbur Sargent Locke,	Samuel A. Bigelow,
Col. H. P. Bope,	Hon. J. F. Fitzgerald,
Francis B. Austin,	Rev. Willard Scott,
Walter L. Doten,	Charles F. Bragg,
John T. Boyd,	Hon. William Alden Smith,
J. Bradford Hunter,	Hon. Samuel L. Powers,
Dr. H. W. Boutwell,	Andrew G. Webster,
Roswell M. Boutwell,	Charles E. Adams,
Roland H. Boutwell,	F. H. Butts.
Oscar A. Shepard,	

The New England Iron and Hardware Association has become noted for the excellence of its annual dinners, and these occasions always bring together a large number of the trade, and there appears to be no apparent loss of interest as the years go by.

HOMER FOOT & Co., Springfield, Mass., jobbers and retailers in Hardware and Mill Supplies, will remove their business from the present location at Main and State streets to 139 State street. The store will be fitted up to furnish quarters for a modern, well equipped Hardware store. The company will take on some new lines and will discard some of the old.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our catalogue department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

BARRETT MFG. COMPANY, 17 Battery Place, New York: Attractive winter number of trade organ, "Barrett's Review," devoted to the interests of Roofing Material, Building Paper, &c.

S. A. ALLEN & Co., Philadelphia, Pa.: Illustrated catalogue for 1906 of Planet, Jr., Farm and Garden Tools; also circulars referring to No. 6 Drill and No. 74 Riding Cultivator, which are offered for the first time.

WM. SCHOLLEHORN COMPANY, New Haven, Conn.: 1906 catalogue and price-list referring to Pliers, Nippers, Punches, Dividers, &c., with circular calling attention to changes in list prices.

WEBER-KIRCH MFG. COMPANY, Keokuk, Iowa: Circulars referring to Flue Stop, Adjustable Flue Thimbles, Stove Pipe Collars, Rural Mail Boxes, Curry Combs and Cream Separators.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.: 1906 catalogue and price-list of Loaded Shells.

HINDLEY MFG. COMPANY, Valley Falls, R. I.: Price-list of Columbia Spring Cotters, dated January 1.

HAY-BUDDEN MFG. COMPANY, 254-278 N. Henry street, Brooklyn, N. Y.: Price-list with illustrations of patterns of Hay-Budden Solid Wrought Anvils.

B. F. AVERY & SONS, Louisville, Ky.: Eighty-first annual catalogue for 1906-1907, illustrating and listing a large line of Plows and Cultivating Implements, with appendix listing parts, &c., and giving full directions for setting up.

COOPER & MCKEE, Brooklyn, N. Y.: Catalogue illustrating Hardwood, White Enameled Lined and Glass Lined Refrigerators, Ice Chests, Nursery Refrigerators, &c. It is an attractive, well printed catalogue and will be appreciated by the trade.

POTTER MFG. COMPANY, Geneva, Ohio: Illustrated catalogue and price-list for 1906 of Housekeepers' Hardware, Hardware Specialties, Cross Cut Saw Handles and Garden and Floral Tools.

DIAMOND SAW & STAMPING WORKS, Buffalo, N. Y.: Catalogue of Sterling Hack Saw Blades and Frames, Power Machines, Kitchen Saws, &c.

CORBIN CABINET LOCK COMPANY, New Britain, Conn.: 1906 catalogue and price-list of Keys and Key Blanks, Tags, Strikes, Rings, &c.

MARSHALL-WELLS HARDWARE COMPANY.

THE MARSHALL-WELLS HARDWARE COMPANY, Duluth, Minn., has increased its capital stock about \$300,000, making the total issue now \$2,400,000. When the company in 1900 decided to move from Fifth avenue west to Lake avenue, the Wells estate and other of its stockholders offered to purchase the site and erect a building, the Hardware company to have the privilege of buying the building and real estate later if desired. This has now been done, the company paying the purchase price of \$367,000. An interesting fact is that the stockholders who owned the building asked the privilege of taking the bulk of this amount in stock of the company, which they were allowed to do to the amount of \$300,000. The building is a seven story brick and stone structure, 300 x 265 feet. The company now has plans for the erection the present year of a building for the manufacture of horse collars. The officers of the company are: President, A. M. Marshall; vice-president, A. H. Comstock; treasurer, H. C. Marshall, and secretary, F. W. Parsons.

D. A. Crocker, Pleasanton, Kan., has sold his Hardware business to Robert Pearce.

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Inland Empire Implement and Hardware Association.

THE first annual meeting of the Inland Empire Implement and Hardware Association was held at Spokane, Wash., January 10, 11 and 12. It was called to order by President C. L. Butterfield, of Moscow, Idaho. Mr. Butterfield introduced Hon. Floyd L. Dagget, Mayor of Spokane, who welcomed the visitors to the city in a felicitous address. The president gracefully responded on behalf of the association.

President's Address.

Mr. Butterfield then delivered his annual presidential address, from which we make the following extracts:

On assembling for our first annual meeting I feel that we have cause for congratulation on the promotion of those objects for which we organized. Within the year not only has the membership been increased, but the Washington Hardware and Implement Dealers' Mutual Fire Insurance Association has been successfully launched, with every prospect of success. At our June meeting the cordiality between dealers as competitors was noticeable, and the round of good cheer which is here manifest indicates that the ties of friendship are strengthening.

The year has not passed without its trials. Some dealers, in their anxiety for business, have trespassed at times upon the trade rights of others; but as we grow in years this will be gradually eliminated in all localities, as it has now been wholly in many places where previously no rights were accorded and the placing of goods was the main object, whether safely sold being of secondary importance.

EXCHANGE FEATURE.

I desire to call your attention to a feature which was spoken of at our previous meeting, but has not yet been incorporated among our permanent accomplishments. It is the exchange. Any well-stocked store will at times accumulate a surplus of certain goods, but the articles that are surplus in one town may be short in another, and by members listing with the secretary the goods they would like to be relieved of they may find a quick market, thereby turning dead stock into live money, and by communicating with the secretary when they need something especially quick, or that possibly may not be obtained from jobbers, they will obtain the wares needed, accommodating customers and receiving the profits of the deal.

WE MUST KEEP IN MIND

the main local objects of our association: Eradicating the losses and leakages of business; discontinuing that which is questionable as a money maker; refraining from selling to doubtful customers other than on good security; selling closer to cash; endeavoring to get in closer touch with the manufacturers and jobbers, so that they may have confidence in the retail merchant when times tighten, as they sometimes must, thus permitting extensions to be granted on terms not onerous, and the dealer thus continue in business and, as times improve, work out of his embarrassment rather than go into bankruptcy and have his stock of goods thrown on the market for sale at what they will bring. The relation of manufacturers and jobbers with retail interests should be such that when a stock must be closed out the goods will be taken and resold to dealers handling the same lines, thus protecting the trade against cut prices and demoralized methods.

Mr. Butterfield then referred to the general subject of organization in the trade and what had been accomplished through it. If the Inland Empire merchants who were not members of the association only realized how much had been done in their behalf by Hardware manufacturers and jobbers, and by retail merchants affiliated with State associations, they would hesitate no longer to give the movement their hearty support by becoming members of the association, thus helping on and co-operating in the good work.

Secretary's Report.

The report of E. W. Evenson, the energetic and enterprising secretary of the association, was a voluminous document, but very interesting and practical. It chronicled the work of the association with much detail and care and contained a number of recommendations and suggestions.

Mr. Evenson referred to the organization of the Washington Hardware & Implement Dealers Mutual Fire Insurance Association as having interfered a good deal with his spending time on the road in quest of new mem-

bers. Some time, however, was spent in canvassing, and referring to his experience in this department of the association work he said:

Whenever your secretary has gone into a town wherein all the dealers are members of this association I have found that very little friction if any existed. Where there has been friction found it has been due to the lukewarmness of the dealers toward the association. In such cases it is the rule that your secretary is usually enlightened by the member telling him of the many underhanded things which his competitor has done and what an all round rascal he is. I have gone into a town with three dealers in it and have been told by all of them what an all round rascal each of the others is. Neither have spoken to the others for years, and all the information any of them have upon the subject of each others' virtues and vices is the information given them very freely by the customer looking for a concession in price. You can readily see the results obtained by relying upon or following up such information. In such cases it has been the work of your secretary to get the dealers together and introduce them to one another, and good results usually follow.

Mr. Evenson emphasized the necessity of having a majority of the Hardware merchants of the Inland Empire as members of the association, and urged those present to energetic efforts in this direction. "Boost for the association," he said. "Speak well of it to every one you meet who is interested in your line of trade."

He expressed the gratitude of the association to



E. E. LUCAS.



C. L. BUTTERFIELD.

manufacturers and jobbers for their assistance in correcting many minor evils in their relations with the retail trade, but called attention to some other abuses from which retail merchants were still suffering. Under the head of catalogue house competition he said that dealers had been too absorbed in other matters to give this subject the attention which it deserved. It was time to "get busy" when these houses had shipped more weight in Stoves to a certain town in the fall months of last year than the local merchants.

The project for the establishment of a parcels post was touched upon and the members urged to write to their representatives in Congress impressing upon them the demoralization and injury that would ensue to retail interests from the enactment of such a measure. One-cent letter postage was suggested as a counter measure to advocate.

Among other topics touched upon was the new peddlers' law, the matter of cutting out canvassers, the past season's Twine business, which was generally successful owing to the maintenance of prices which insured a profit; freight rates, in which some advantageous reductions were obtained through the efforts of the association; the custom of some jobbers of naming a price on spring work to liverymen somewhere between the regular trade price and the retail figure, and fixing a minimum price in conjunction with jobbers and manufacturers at which Wagons shall be sold.

In conclusion, Mr. Evenson said that the association

had 140 members in good standing, and "if those who are in arrears will kindly pay their dues we will have a great many more. I do not count as members," he said, "any man upon the rolls who is six months in arrears, as the by-laws do not permit me to do so."

New Officers.

The first business of the morning session on the 11th was the election of officers for the ensuing year. The following officers were chosen:

PRESIDENT, E. E. Lucas, Davenport, Wash.
FIRST VICE-PRESIDENT, R. L. Spiker, Nez Perce, Idaho.
SECOND VICE-PRESIDENT, A. Urbohn, Spokane, Wash.
SECRETARY, E. W. Evenson, Spokane, Wash. (re-elected).
TREASURER, J. A. Fridaker, Spokane, Wash. (re-elected).
DIRECTORS FOR THREE YEARS: C. L. Butterfield, Moscow, Idaho;
E. L. Scott, Oakesdale, Wash.; A. B. Salmon, Wilbur, Wash.; L. C. Fisher, Sprague, Wash.; F. J. Guth, Odessa, Wash.

Mutual Insurance.

After J. W. Johnston of Oakesdale, Wash., chairman of the Legislative Fund Committee, had made his report,



R. L. SPIKER.



E. W. EVENSON.

W. P. Lucas of Davenport, chairman of the Insurance Committee, reported that the Association Insurance Company received its certificate of incorporation more than two months since. It was now fully organized and ready for business. The only thing that remained to be done was the securing of subscriptions to the amount of \$200,000, as required by the State laws. Just as soon as the members guaranteed this amount of insurance the company would begin to write policies. Mr. Lucas and Secretary Evenson explained in detail the working of the insurance department of the association and the subject was discussed at much length.

Payment of Dues.

The subject of payment of the annual dues was taken up at the afternoon session, and as the secretary had reported delinquency on the part of some of the members a motion was made and carried that the secretary be instructed to draw upon dilatory members when they fail to remit within a certain period, those in arrears at the time of the meeting being given 10 days in which to make good their obligation.

Catalogue House Competition

was the subject of a brief address made by J. T. Larrabee of Edwall, Wash. Mr. Larrabee said that when one of the Chicago catalogue houses claimed that it was offering the consumer wholesale prices it was telling the honest truth. In fact, in some instances, the consumer was buying at lower prices through the catalogue house than the retailer could obtain the same goods from the jobber. The speaker then quoted prices from one of the catalogues to substantiate his position.

Credit Abuses.

The programme called for an address from J. N. Nankervis, of Moscow, Idaho, on "Maintaining Prices—Does It Pay?" but on being introduced Mr. Nankervis suggested that he would take advantage of the latitude given him by Secretary Evenson, who wrote him that he might talk on the subject assigned to him or any other topic he liked. He said he did not believe that there was a man

in the Inland Empire with intelligence enough to conduct the Hardware or Implement business who did not know that it paid to maintain prices. He preferred, however, to talk on the subject, "Who are the Actual Bankers of the Inland Empire?" which suggested thoughts, he said, deserving of the most careful consideration on the part of merchants.

Mr. Nankervis spoke, in part, as follows:

During the many years that I was on the road I had the pleasure of examining financial conditions of a great number of business houses that were my agents, and it was also my good fortune to have some friends in the banking business from whom I got such information as would permit me to make a comparison between the money that was actually loaned by the banks, as against the money or its equivalent loaned by the dealers directly to the farmer. I found that over 80 per cent. was extended to the farmer or consumer, as against the actual money that would be loaned by the banks to those people.

Now, if we are the actual bankers of the Inland Empire, I ask you if we are not entitled to some compensation besides the mere profits we get on the goods we sell?

The speaker then described the system followed by the banks in loaning money to individuals, firms and corporations. He continued:

Now what is the system under which the Implement and Hardware dealers have been doing business? In ninety-nine cases out of a hundred the individual comes into our place of business, buys our goods and either gives his note for future payment or for cash at a loss or it is charged to him. When an individual goes to the bank to borrow money he is immediately taken into the private office of the bank or around to the little wicket gate, and after they have ascertained his financial condition thoroughly they will then generally tell him it is a rule of the bank that they must have a signer to the note which they propose to give or security—security which will make it absolutely good.

DOES THE FARMER GET MAD?

Does he tell the bank he will go down to the First National or to the Traders' National Bank and get the money on his individual note? If he declines to furnish such security and walks out of the door do the bank officials follow him and take hold of him and tell him, "Oh,



J. A. FRIDAKER.



F. T. LARRABEE.

that is all right; I guess you can have the money on your individual note?" No, indeed. The bank does not care.

Do you have such a system? When such a man comes to you for credit and doesn't deserve it and says he will go to your competitors, do you tell him to go? No; you don't tell him anything of the kind. You run after him, catch him away up the street and sell him. Is that right? If we are going to endeavor to conduct the banking business of the Inland Empire why should we not demand an equality—something the same as the bank would do?

"FARMER'S SALE."

We say we cannot exact this security. Is there a community in the Inland Empire that during the year 1905 has not had a "farmer's sale" where the farmer has sold off his product? Is there an implement dealer in this room who has not seen a second-hand auction sale on the farm? I don't believe there is one. Did you ever look on the bottom of one of those bills advertising the sale, "Notes will be taken on approved security?" I don't believe you ever saw one but what was advertised that way. In other words, the farmer is coming to you all the time, buying your goods and giving you future due paper there-

for, without security, but when he has an auction sale on his farm of his products and second-hand machinery, &c., he demands cash or well-secured paper.

Ought not we to be placed on an equality with the farmer who is selling his second-hand goods and demands security? I think we ought.

We dealers have not got that degree of honesty among ourselves that we should have. It seems to me that we are altogether a little too afraid of the "other fellow" up the street—that the other fellow up the street might sell a few dollars' worth of goods more than we sell; consequently we are anxious to sell and don't pin Mr. Farmer or the consumer down. But we should be more honest in this respect. When we find that we have a customer who is "into us" as far as we will allow him to get, would it not be a good idea for us to go and consult with the other dealers in the territory where this customer would naturally buy his goods, and say to them: "Here, this man owes us so much money; we want to get it out of him. Instead of you people putting a stumbling block in our way, whereby we will never get our money from him, won't you help us by refusing to extend credit to him?"

Mr. Nankerois also made the point that merchants put too much dependence on what the future crop will produce, and permitted a farmer to buy too many goods on the strength of it. He also urged merchants to get together and require an earlier date of maturity on their notes from farmers, suggesting that there was no valid reason why they should not mature before September 1.

J. H. Berge of Davenport, Wash., followed with a very interesting paper, entitled "The Man Up the Street."

Mr. Bogardus's Letter.

W. P. Bogardus of Mount Vernon, Ohio, president of the National Retail Hardware Association, who was especially invited to be present at the convention, was unable to come, and sent a letter in which he referred to the birth of the Hardware association movement and its notable development and growth. The selfish spirit of commercialism was also touched upon, as well as the necessity for unity on the part of Hardware merchants in an endeavor to neutralize or overcome efforts which are being made to impose handicaps on the conduct of the business.

H. C. Staver's Address.

The Thursday afternoon session was brought to a close with an address by H. C. Staver of the Staver Carriage Company, Chicago, Ill. Mr. Staver brought the greetings of the National Association of Vehicle and Implement Manufacturers, and congratulated the association on the prosperity not only of the Inland Empire but of the whole country. Mr. Staver's address was a very interesting one and touched on many phases of the business in a way that won approval.

Manufacturers' and Jobbers' Session.

The Friday morning session was opened with a paper on "Buying and Overbuying," by A. C. Tyler of McGowan Bros. of Spokane, Wash. This was followed by an address by E. M. Brannick, manager of the Portland (Ore.) house of the Studebaker Bros. Mfg. Company, on "Salesmen and Salesmanship," after which W. A. Jones of the *Weekly Implement Trade Journal* of Kansas City, Mo., read a paper entitled "Relation of the Trade Paper to the Dealer." The remainder of the session was taken up with short addresses by representatives of manufacturers and jobbing houses, including W. S. Bilger of the Seattle Hardware Company, Seattle; George Boole of Schwabacher Hardware Company, Seattle; A. H. Potter, manager of Portland (Ore.) branch of E. C. Atkins & Co.; F. H. Mason of Holley-Mason Hardware Company, Spokane; Lee Johnson of the J. I. Case Threshing Machine Company, and others.

Mutual Insurance Again.

At the closing session on Friday afternoon W. P. Lucas of Davenport, Wash., president of the Washington Hardware and Implement Dealers' Mutual Fire Insurance Association, read an interesting paper on "Our Mutual Fire Insurance Association," which was followed by a few remarks on the general subject of mutual insurance by C. A. Loy of Fairfield, Wash., vice-president of the insurance association, and by Secretary Evenson.

The Auditing Committee reported the books in excellent shape, with all debts paid and a little surplus.

The by-laws were so amended that the annual meeting

will hereafter be held on the third Monday in January, so as not to interfere with stock taking time.

H. C. Staver of the National Association of Vehicle and Implement Manufacturers recommended that the association join the National Federation of Implement Dealers, setting forth the advantages to be derived from such affiliation. After a lengthy discussion it was decided to postpone action until the next meeting of the association.

The Banquet.

On Friday evening a fine banquet was tendered to the association by the manufacturers and jobbers at the Spokane Hotel. It proved to be a most interesting and enjoyable affair.

COMING RETAIL HARDWARE CONVENTIONS.

The following conventions of Retail Hardware Associations will be held during January, February and March:

NORTH DAKOTA RETAIL HARDWARE ASSOCIATION:

Ninth Annual Meeting at Grand Forks, January 30 and 31. Membership 226, an increase of 50 since last meeting. President, H. F. Emery, Fargo; secretary, C. N. Barnes, Grand Forks.

COLORADO RETAIL HARDWARE ASSOCIATION:

Fourth Annual Meeting at Denver, February 7 and 8. Headquarters, Adams Hotel. President, A. B. Meserve, Colorado Springs; secretary, Davis Barkley, Fort Collins.

WISCONSIN RETAIL HARDWARE ASSOCIATION:

Tenth Annual Meeting at Milwaukee, February 7 and 8. Headquarters and Exhibits at West Side Turn Hall. Membership 530, an increase of 75 since last meeting. President, Ralph Burtis, Oshkosh; secretary, C. A. Peck, Berlin.

PENNSYLVANIA RETAIL HARDWARE ASSOCIATION:

Fifth Annual Meeting at Williamsport, February 6, 7 and 8. President, George V. Thompson, Mt. Jewett; secretary, J. E. Digby, McKees Rocks.

INDIANA RETAIL HARDWARE ASSOCIATION:

Seventh Annual Meeting at Indianapolis, February 13, 14 and 15. Headquarters and Exhibits at Tomlinson Hall. President, A. N. Shidler, South Bend; secretary, M. L. Corey, Argos.

NEBRASKA RETAIL HARDWARE ASSOCIATION:

Fifth Annual Meeting at Lincoln, February 13, 14 and 15. Membership 248, an increase of 75 since last meeting. President, Max Uhlig, Holdrege; secretary, Frank K. Barr, Lincoln.

IOWA RETAIL HARDWARE ASSOCIATION:

Eighth Annual Meeting at Des Moines, February 14, 15 and 16. Headquarters and Exhibits at Bush Block. President, H. S. Vincent, Fort Dodge; secretary, A. R. Sale, Mason City.

MISSOURI RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION:

Eighth Annual Meeting at Hannibal, February 20 and 21. President, Taylor Frier, Louisiana; secretary, Fred. Neudorff, St. Joseph.

ILLINOIS RETAIL HARDWARE ASSOCIATION:

Eighth Annual Meeting at Chicago, February 20, 21 and 22. Headquarters and Exhibits at First Regiment Armory. President, Frank B. McKenney, Rockford; secretary, L. D. Nash, Elgin.

KENTUCKY RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION:

Sixth Annual Meeting at Louisville, February 20, 21 and 22. Headquarters and Exhibits at Galt House. President, J. C. Frederick, Owensboro; secretary, John R. Sower, Frankfort.

NEW YORK STATE ASSOCIATION OF RETAIL HARDWARE DEALERS:

Fourth Annual Meeting at Binghamton, February 20, 21 and 22. President, C. P. Sherwood, White Plains; secretary, J. B. Foley, Syracuse.

CONNECTICUT RETAIL HARDWARE ASSOCIATION:

Third Annual Meeting at New Haven, February 27 and 28. Membership 65, about two-thirds of the Hardware merchants of the State. President, Chas. G. Agard, Torrington; secretary, James De F. Phelps, Windsor Locks.

OHIO HARDWARE ASSOCIATION:

Twelfth Annual Meeting at Canton, February 27 and 28 and March 1. Headquarters and Exhibits at Auditorium Building. President, John F. Baker, Dayton; secretary, Frank A. Bare, Mansfield.

MINNESOTA RETAIL HARDWARE ASSOCIATION:

Tenth Annual Meeting at Minneapolis, February 28, March 1 and 2. Headquarters at Nicollet House. Membership 690, an increase of 45 since last meeting. President, A. T. Stebbins, Rochester; secretary, M. S. Mathews, Boston Block, Minneapolis.

NEW ENGLAND RETAIL HARDWARE ASSOCIATION:

Thirtieth Annual Meeting at Boston, March 1 and 2. Headquarters and Exhibits at Hotel Vendome. President, J. B. Hunter, Boston; secretary, F. Alexander Chandler, 36 Federal street, Boston.

CALIFORNIA STATE RETAIL HARDWARE ASSOCIATION:

Fifth Annual Meeting in March at San Francisco. President, H. C. Bennett, San Francisco; secretary, Henry Gracey, 235 Powell street, San Francisco.

NATIONAL RETAIL HARDWARE ASSOCIATION:

Annual Meeting at Chicago, March 20, 21 and 22. President, W. P. Bogardus, Mt. Vernon, Ohio; secretary, M. L. Corey, Argos, Ind.

Illinois Retail Hardware Association.

As indicating the interest taken by manufacturers in the annual conventions of the retail associations, we are advised that the following concerns have already arranged to make exhibits at the meeting of the Illinois Retail Hardware Dealers' Association, which will be held at the First Regiment Armory, Chicago, February 20-22:

Allith Mfg. Co.	Lisk Mfg. Co.
American Steel & Wire Co.	Lovell Wringer Co.
American Wringer Co.	M & D Range Co.
E. C. Atkins & Co.	Malleable Iron Range Co.
Ayling Bros.	A. Vere Martin.
A. C. Barler Mfg. Co.	Michigan Stove Co.
Estate of P. D. Beckwith.	Mueller Furnace Co.
E. Bement & Sons.	National Cutlery Co.
Geo. H. Bishop & Co.	Nickel Plate Stove Polish Co.
Black Silk Stove Polish Co.	North Bros. Mfg. Co.
Boynton Furnace Co.	Peerless Steel Range Co.
Briscoe Mfg. Co.	Pike Mfg. Co.
Brown & Sharpe Mfg. Co.	Pittsburgh Steel Co.
Cassidy-Fairbanks Co.	F. F. Porter Co.
Cataraugus Cutlery Co.	T. C. Prouty Co.
Challenge Refrigerator Co.	Ranney Refrigerator Co.
H. Channon Co.	Jacob Retterer.
Cleveland Stamping & Tool Co.	Revolving Nail Bin Co.
Cole Mfg. Co.	Richards Mfg. Co.
Comstock-Castle Stove Co.	Richmond Cedar Works.
Cribben & Sexton Co.	Robeson Cutlery Co.
Culter & Proctor Stove Co.	Robinson Furnace Co.
Excelsior Steel Furnace Co.	Rochester Stamping Co.
Factory Sales Co.	Rothschild, Myers & Co.
Favorite Stove Co.	Shelby Spring Hinge Co.
Fleberger Heating Co.	Simonds Mfg. Co.
Friedley & Voshardt.	Chas. Smith Co.
Gee Whiz Washing Machine Co.	A. T. Stewart & Co.
Harris & Cole Bros.	Streator Metal Stamping Co.
Hibbard, Spencer, Bartlett & Co.	Summit Foundry Co.
Hunt, Helm, Ferris & Co.	E. Tressing & Co.
Joliet Stove Works.	Trout Hardware Co.
John Kontny.	Voss Bros.
Landers, Frary & Clark.	Wahle Foundry & Machine Co.
Lawson Mfg. Co.	White Lily Washer Co.
Lennox Furnace Co.	Harry L. Welsbaum.
Lindemann & Hoverson Co.	Wheeling Corrugating Co.
	James C. Woodley & Co.

North Dakota Association

A very large attendance is promised for the ninth annual convention of the North Dakota Retail Hardware Association, which will be held at Grand Forks, January 30 and 31. An interesting programme has been prepared, which includes at the opening session an address by Hon.

E. Y. Sarles, governor of North Dakota. At this session there will also be a paper on "Organization, Salesmanship and Advertising," by Alex. W. Crozier of the National School of Salesmanship of Minneapolis. Other addresses during the convention will be made by G. B. Coffin of Chicago and E. F. Ladd, State commissioner in charge of pure paint law, on "The Pure Paint Law of North Dakota"; by M. L. Corey, secretary of the National Retail Hardware Association; by W. G. Van Sickle of Chicago, on "Gasoline and Its Effects"; by P. B. Rognlie, Esmond, on "Trade Abuses at Home," and by V. W. Hartman, St. Paul, Minn., on "Paints as a Desirable and Profitable Line to Be Carried by the Hardware Trade." The special feature of the evening session on the 30th will be a stereopticon lecture by National Secretary M. L. Corey. The morning session on January 31 will be assigned to the jobbers and manufacturers and will be occupied by them in addresses and general discussions, the principal address being delivered by A. C. Bartlett of Hibbard, Spencer, Bartlett & Co., Chicago, whose interesting topic will be "Business Success." Every railroad operating in North Dakota has granted a rate of a fare and a third to Grand Forks from all points in the State, as well as from Minnesota points.

National Association.

It has just been determined to hold the next annual convention of the National Retail Hardware Association in Chicago on March 20, 21 and 22. With the accession of the South Dakota Retail Hardware Association, which was formed last week, as noted in another column, the National Association now comprises 21 affiliated organizations, covering 27 States. New members to the number of 2500 were added during the past year, a growth nearly double that of any former year. "Retail organizations are growing more compact and united every day," says National Secretary M. L. Corey, "while the spirit of loyalty and confidence in the National is more manifest than ever before."

Connecticut Retail Hardware Association.

The several committees recently appointed to arrange details for the third annual meeting of the Connecticut Retail Hardware Association, to be held in New Haven February 27 and 28, have progressed satisfactorily in their work. The headquarters will be at Hotel Davenport, where rooms may be obtained, and where the guests of the association will probably be entertained. The convention will open at 1 p.m. on February 27 in the Chamber of Commerce rooms, when routine business will be transacted and officers will be elected for the ensuing year. There will be addresses by the national officers present and the Question Box will be inaugurated under the direction of a committee to be appointed at the time, to report on the following day with answers to questions. Tickets for the theatre for that evening will be distributed, after which the members will adjourn to supper. At the closing session on the morning of February 28 there will be addresses by manufacturers, guests and representatives of trade journals. The banquet of the association will be at 1.30 in the afternoon. A great deal of interest is being manifested in the meeting, and the result will doubtless be a very large attendance. The committees in charge are as follows: Hotel Accommodations, H. W. Kelley and R. T. Warner, New Haven; Banquet and Lunches, F. L. Leighton and George J. Bassett, New Haven; Theatre and Entertainment, R. C. Lightbourn, W. H. Burchell and Fred J. Meyers, New Haven; Manufacturers' Exhibits, E. M. Walsh and G. H. Baker, New Haven; Reception Committee, F. T. Terry, Ansonia; A. H. Abbe, New Britain; Irving C. Treat, Hartford; W. A. Church, Derby.

ANNOUNCEMENT is made that the American Ring Company, formerly represented in New York by Plume & Atwood Mfg. Company, 29 Murray street, now occupies its own office in the Irving Building, 1 and 2 Hudson street, corner of Chambers street, in charge of J. A. Inness. All accounts and correspondence are to be handled from the main office at Waterbury, Conn.

SOUTH DAKOTA MERCHANTS ORGANIZE

A VERY promising State Association was organized at a meeting in Mitchell, S. D., on the 17th and 18th inst. Nearly 150 Hardwaremen from all parts of the State were present, the attendance being much larger than anticipated. The gathering was characterized by much enthusiasm and the association was inaugurated under the most flattering auspices. Jobbers covering this territory were well represented and their traveling men aided materially in the success of the meeting.

Much of the credit for the formation of the association is due to George M. Evenson of the Knapp & Spencer Company, Sioux City, Iowa, who kindled the interest of the South Dakota merchants and brought about the meeting. Mr. Evenson was, however, prevented from attending and witnessing the splendid culmination of his efforts through the death of his father, which occurred just prior to the meeting. His absence, and especially the occasion for it, were deeply regretted by all.

The Meeting Was Held

in the city auditorium. Edward Hawkins of Vermillion was chosen chairman, and E. I. Gregory of Alexandria, secretary. Committees were appointed to prepare constitution and by-laws and to nominate officers. A feature of the first session was an able address by O. L. Schutz of Minneapolis, Minn., in which he pointed out some of the reasons for the organization of such associations and some of the abuses which may be corrected through them.

M. L. Corey's Address.

M. L. Corey of Argos, Ind., secretary of the National Retail Hardware Association, was present and with his wide experience as an organizer aided materially in the work of putting the new association on a good basis. Mr. Corey made a formal address at the Thursday afternoon session in which he spoke at length on the subject of catalogue house competition. At the conclusion of Mr. Corey's remarks it was decided by a unanimous vote to affiliate with the National Association.

Election of Officers.

The following were elected officers of the new association:

PRESIDENT, E. D. Hawkins, Vermillion.
FIRST VICE-PRESIDENT, Otto E. Muller, Aberdeen.
SECOND VICE-PRESIDENT, F. J. Pixley, Montrose.
SECRETARY, Noah Keller, Woonsocket.
TREASURER, B. G. Wattson, Chamberlain.
EXECUTIVE COMMITTEE: E. I. Gregory, Alexandria; F. J. Birkinbine, Scotland; H. E. Johnson, Redfield; F. Rummel, Sioux Falls; M. H. Gosche, Mitchell; John Roper, Parker; F. O. Steensland, Beresford; Noah Keller, Woonsocket; B. G. Wattson, Chamberlain.

E. D. Hawkins of Vermillion, and Noah Keller of Woonsocket were elected delegates to the national convention, which meets in Chicago in March.

Next Meeting at Aberdeen.

When it came to selecting the place for the next annual convention a communication from the Commercial Club of Mitchell was read, inviting the Hardwaremen to hold their next convention in that city. Some of the merchants from the northern part of the State, however, expressed the belief that it would be to the best interests of the association to hold the next convention in that section. When the ballots were counted, Mitchell had 23 votes and Aberdeen 29, and thus Aberdeen was selected as the place for holding the convention next year. The date of meeting will be determined by the Executive Committee.

An Interesting Discussion.

The closing session of the convention was an exceptionally interesting one the discussion of various subjects being taken up. One of the matters that caused more or less discussion was the way in which some of the merchants handled their competition.

E. I. Gregory of Alexandria stated that his methods had proven successful and had been adopted by several other merchants in that town. He said that he confined himself exclusively to the Hardware trade, and while he formerly carried crockery, fruit jars, etc., he had now

cut them entirely out of his line of goods, so as not to interfere with the line of the grocers. Since doing this, he stated, the grocers who formerly carried enameled ware and a few other things that belonged to the Hardware line had taken those goods from their shelves and they thus did not cut into one another's business.

Z. Richey of Yankton believed that if the merchants of a town would get together and have a social smoker occasionally and talk over business matters there would be less friction in trade.

J. Vetsch, a member of the Executive Committee of the South Dakota Traveling Men's Association, addressed the convention on the relations that should exist between the retailer and the traveling man. Mr. Vetsch declared that these two ought to be in pretty close touch, and that in his experience he had found it to be beneficial to both, inasmuch as one is more or less dependent upon the other.

Resolutions.

The following resolutions were adopted:

Resolved, That we extend thanks to M. L. Corey for the kind assistance he has so liberally extended to us in forming this organization.

Resolved, That we thank the committee which has spent so much effort to bring about the organization of this association.

Resolved, That we thank the city of Mitchell for its kind and courteous treatment during this convention.

Resolved, That we thank the Commercial League for extending to us the use of their hall and their courteous entertainment.

Resolved, That every member of this association put forth every effort within his power to defeat the parcels post bill.

Resolved, That the sale of either jobbers or manufacturers of Hardware to local contractors or consumers is detrimental to our interests and that any such sale when known to a member of the association shall be reported by him to the Executive Committee.

Resolved, That every member of this association shall buy, as far as possible, from only legitimate Hardware jobbers.

Resolved, That each and every member of this association shall put forth every effort to enforce the peddler and transient merchant law.

Retail Merchants' Interests in Jeopardy.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., January 23, 1906.

EVIDENCE is rapidly accumulating that the retail Hardware trade of the country will have to meet during the present Congress the most systematic and powerful effort yet made to reduce the rate of postage on merchandise. And this does not mean the parcels post crusade. The advocates of that paternalistic project are always with us and will work harder this winter than ever, but there are a good many reasons, which need not be stated here, why this extravagant proposition will probably make little headway at the present session. The scheme that will be brought forward with the best prospect for success is that long advocated by the Third Assistant Postmaster General and now fathered by the Postal Progress League, namely, the reduction of the postage on merchandise from 16 to 8 cents per pound through the consolidation of third and fourth class mail matter. It will require but a moment's thought to convince any practical business man that this project is

Fraught with the Greatest Danger

to the retail trader in every line of merchandising. The bill drafted to authorize the change is a simple measure of three or four lines which its friends hope to have added to the post-office appropriation bill when that measure is drafted by the House Post-Office Committee. It is the usual practice for the committee to call before it the Postmaster General and his assistants before the annual budget bill is framed, and it goes without saying that the recommendations, as earnestly made by the Third Assistant Postmaster General in his last annual report, will be verbally repeated with considerable emphasis when these hearings take place.

It is greatly to be regretted that the postal officials

have not seen fit to stand pat in their opposition to all projects for the reduction of the rates of postage on merchandise. The mails were intended for the dissemination of intelligence and not for the handling of freight. The uncontradicted statement has been made that the proposed consolidation of third and fourth class matter would mean a reduction in the postage bill of one of the giant mail order houses of not less than \$200,000 per annum, thus giving these concerns which use the mails as a delivery system an additional advantage over the merchants in the small towns, who in many cases are now making a life and death struggle for existence in the face of cut throat competition.

It is only fair to say that the Department officials have little knowledge and hence no appreciation of the extent to which the catalogue houses have already succeeded in demoralizing retail business in many communities.

The Only Reasons

ever put forward officially for this consolidation scheme, the effect of which would undoubtedly be most disastrous to the retailer, have been, first, that it would in some degree relieve the pressure for a domestic parcels post and, second, that it would simplify the problem occasionally presented to a postmaster as to the proper classification of certain mailable matter which might be regarded either as merchandise or as printed matter, according to the official's point of view. With regard to the parcels post feature of this argument very little need be said. As long ago as 1902 the Third Assistant Postmaster General made this statement:

The difficulty of differentiating between third and fourth class matter is annoying to the postal official and irritating to the public. This irritation is accentuated by the well-known fact that under the parcels post arrangements matter of the fourth class (merchandise) is sent to certain foreign countries in packages larger than are admissible to the domestic mails and at less than the domestic rate of postage—1 cent an ounce or fraction thereof.

In his annual report for 1905, recently made public, the parcels post argument is abandoned and the Third Assistant makes a plea for "a thorough revision of all laws in relation to the classification of mail matter except that of the first class, which is composed of letters, United States postal cards and private post cards." If Congress is unwilling to undertake this "thorough revision" the Third Assistant suggests the immediate consolidation of third and fourth class matter as an alternative proposition or species of compromise. In support of this consolidation the Third Assistant has this to say:

As between matter of the third and fourth classes there is much difficulty of correct and satisfactory administration. It often happens that similar matter mailed at one post office at the third-class rate is at another post office, due to the different interpretation of the postmaster there, required to be prepaid at the fourth-class rate. This is a great annoyance to the public, and it is unjust and a great hardship to patrons of the service. It can be corrected only by a ruling of the Department. One of the postmasters is, of course, wrong in his interpretation. This is expensive to the person who is required to pay the higher rate, if it be improper, and that sort of thing brings reproach upon the service. The consolidation of the third and fourth classes, which I recommend, will correct this. Simplification is what is needed, and needed badly, and it should be carried to the utmost.

It is perfectly obvious from the tenor of these recommendations that the Department's support of the consolidation project is based solely on administrative considerations, which really do not appeal to the practical business man as in any degree important. It may be true that now and then the question may arise as to the proper classification of an article like a calendar, advertising blotters, &c., which may partake of the characteristics of both merchandise and printed matter, but this can be made absolutely plain even to the dullest postmaster by a simple rule or two adopted by the Department with the proviso that in cases of doubt the higher rate of postage shall be levied, thus following a principle which governs all official transactions—namely, that doubts shall be resolved in favor of the Government.

Would Increase Deficit More Than \$2,000,000.

In his annual report for 1902 the Third Assistant estimated that the consolidation of third and fourth class

mail matter would at the outset net a loss to the Government of \$1,901,780 per annum on the basis of the previous year's business. At the same time he stated that the weight of the fourth class matter carried during the year was approximately 24,000,000 pounds. There can be no doubt that at the present time the total weight of merchandise transported in the mails exceeds 30,000,000 pounds, from which it would appear that a reduction from 16 to 8 cents in the postage thereon would net a loss of approximately \$2,400,000. The deficit in the postal revenues for the last fiscal year was \$14,594,387 and the estimated shortage during the current year is \$15,500,000. How can Congress in view of these facts give serious consideration to a proposition that would add another \$2,400,000 to this big adverse balance? Certainly the slight difficulty occasionally experienced in properly classifying third and fourth class matter is far outweighed by the cost to the Government of the proposed innovation, not to mention the demoralization that would result in the retail trade in every line.

The House Post Office Committee

will at an early date begin the drafting of the annual Post Office Appropriation bill for the maintenance of the postal service during the fiscal year beginning July 1 next. It is in this bill that an effort will be made to secure authority for the proposed consolidation of third and fourth class mail matter at the 8-cent rate, and retail merchants should lose no time in addressing urgent communications to the committee protesting against the change that would discriminate so strongly in favor of the mail order houses in their fight to secure the retail business of the entire country. The committee is now made up as follows:

Jesse Overstreet, Indiana.
Victor Burdock, Kansas.
John J. Gardner, New Jersey.
John W. Dwight, New York.
Nehemiah D. Perry, Connecticut.
John A. Moon, Tennessee.
Thomas Hedge, Iowa.
James M. Griggs, Georgia.
Joseph C. Sibley, Pennsylvania.
David E. Finley, South Carolina.

Howard M. Snapp, Illinois.
James T. Lloyd, Missouri.
Herman P. Goebel, Ohio.
John H. Small, North Carolina.
Halvor Steenerson, Minnesota.
Wilson S. Hill, Mississippi.
William H. Stafford, Wisconsin.
Marcus A. Smith, Arizona.
Archibald B. Darragh, Michigan.

Letters addressed to these members "care House of Representatives, Washington, D. C.," and dispatched at once will be very effective. W. L. C.

A RECORD PAINT SHIPMENT.

"THE largest single shipment of Paint ever made in this country" is the claim of the Marshall-Wells Hardware Company, Duluth, Minn., for the train of 25 cars which it recently received from the Heath & Milligan Mfg. Company, Chicago. Each car was loaded with 35,000 pounds, making a total for the train load of nearly 900,000 pounds, or 450 tons. For about a week ahead of the train passing through the different towns there had been large posters displayed, advising the citizens to be on the watch for this record shipment when it reached their respective towns. Upon the arrival of the train at a town a young man through a megaphone gave some particulars of the shipment and invited all present to step through a coach attached at the rear of the train and receive souvenirs. The little girls were given sets of Sunshine furniture, the little boys souvenir buttons, the young ladies were given sheet music, the matrons received sample cans of Heath & Milligan specialties and the men were handed articles of practical value. Painters, especially, were cordially welcomed and were presented with practical text books, cigars and printed matter. The invoice amounted to \$75,000 and the freight to \$1500. It required eight days for the manufacturer to fill the order, which included filling the cans and loading the cars.

Hunt Bros., Lincoln, Mo., have been succeeded in the Hardware, Stove, Implement and Sporting Goods business by Joseph Hunt.

The Sale of Woven Wire Fence.

WOVEN WIRE FENCE is now handled quite generally by representative Hardware merchants throughout the country. The demand, of course, varies according to the character of different sections, and largest sales are reported in districts principally given over to diversified farming. Although originally introduced in many communities by farmer and special agents, and often sold direct by the manufacturer to the consumer, the Fence has seemed to find

Its Natural Channel of Distribution

through the Hardware trade. Its exploitation by the most progressive and enterprising merchants was attended by results so satisfactory as to convince the conservative class who wait for the other fellow to do the experimenting that there was something in it for them. Opinions are now expressed that within a few years the line is likely to get down to a standard basis as regards kinds, sizes, &c., thus taking its place as a recognized staple among Hardware products.

Buying Direct from Manufacturers.

A noteworthy feature marking the sale of Bundle Fence is the tendency shown by this line to get to the retailer direct and dispense with the intermediary distribution of the jobber. In this it follows a trend observed in many Hardware products. A retailer is usually given the agency for a certain branch of Fencing, and has the exclusive sale of it in his town and immediate surroundings or even in a larger district. This situation is frankly stated by a New England jobber who writes as follows:

Field Fencing is something we are not very much interested in, from the fact that the Fence people have established agencies in nearly every town in the State, that is to say in towns of any size, so that there is no opportunity for the jobber to make anything. The manufacturers have no jobbers' price, but simply a quantity price, and any one who is their agent can buy on the same footing.

An Ohio jobber takes a similar position:

The sale of Field Fencing is very large and it has greatly decreased the sale of Plain Wire; but as the principal makers sell direct to retailers, establishing exclusive agents, they do not sell jobbers. Under present conditions Fencing is not handled by jobbers in this section and cannot be until makers change their policy.

A New York State Jobbing House

although not handling Fencing at present, offers the following practical suggestions as to its sale by retail merchants:

We think that there is a large trade in Fencing and that it is confined strictly to a single local agent of the manufacturer in each town. The fact that there are quite a number of manufacturers selling in competition makes it evident that the profit to the dealer is rather small, as the factory competition brings this about and the different makes are extensively advertised and quoted in the agricultural publications. Provided the dealer can handle this article in large bulk, it is fair to assume that he can get satisfactory returns, as it runs into money to quite an extent. There is a very large variety of Field Fencing and if this could be reduced and the many kinds which are but slightly dissimilar made into a few, we believe that it would be more satisfactory to all parties handling the article and would be only in keeping with the consolidations of other goods largely made by those who are also engaged in making Wire Fences.

A Practical View

is also taken by a large Eastern jobber, who writes as follows:

There is no question but what Field Fencing is gradually supplanting the Barbed Wire Fences, more particularly in a country where the first cost is not a prominent factor. An average farm Fence is made of Galvanized Wire 49 inches high and has 9 strands of Wire with standards 12 inches apart and sells for 22 to 25 cents per rod. Galvanized Barbed Wire, 9-strand, would weigh about 9 pounds to the rod and at 2½ cents per pound would sell at 22 to 23 cents per rod. The Barbed Wire

Fence can be used with fewer strands at a comparatively less cost, but is becoming a back number. Most of the factories are unwilling to give up their agents and sell to the jobbers, notwithstanding the latter are clamoring for agencies. There is no question but that the Wire Fencing is popular and has come to stay.

Jobbers Clamoring

Attention to Construction

is one of the important matters to occupy a merchant who is trying to make the most of the Fence business. In the early days this fact was not appreciated by Hardwaremen, who thought they were not justified in taking time from their regular lines. An advantage was thus given to Fence agents who had learned the best methods of erection and would take the trouble to assist farmers in the work. Manufacturers of course recognize the importance of such attention in choosing the most favorable avenue for marketing their product. One whose plant is situated in Ohio writes:

Hardware dealers who handle wire fencing successfully are not the men who feel that their duty and responsibility ceases as soon as they have loaded the wire into the farmers' wagons, but the man who carefully instructs the farmer as to how the Fence should be built, or sends a superintendent to oversee the construction of the Fence, is the one who secures the most orders.

Looking After Construction

It is immaterial how good a Fence the average Hardware dealer handles, if he does not look after the construction carefully it will not give good service, and many Hardware men are too busy to give that part of the work the attention which it justly deserves. We admit that it is much nicer to do business with the merchants than through the agents, but until the merchant realizes the necessity of, at least to some degree, looking after the construction of the Fence he is doomed to failure, whereas the Fence agent is out among the farmers all the time and can pay particular attention to each order. He is on the ground, knows the exact conditions in each particular case, and therefore is in a better position to provide for them. From the fact that the average Fence agent handles Fence exclusively, he devotes all his attention to that line of work. Therefore it is more apt to receive the better attention which it deserves than the Fence business does in general from the Hardware dealer.

The Experience of Merchants

bears out the manufacturers' argument that large success in the sale of Fencing depends on energetic introductory and follow-up work as well as a thorough understanding of the line. A merchant in Illinois writes:

Most Effective Methods.

I have had fifteen years' experience in the sale of Wire Fence in connection with my retail Hardware business and found it one of the best side lines outside of regular Hardware. My opinion as to the way Wire Fencing can be most successfully handled is as follows:

1. Get the exclusive sale for your town or city of one good, well advertised Fence.
2. Then thoroughly advertise it in your local papers (daily and weekly), using cuts of your original design besides those electrotypes furnished by the Fence manufacturers. I attribute my large sale of Fence to keeping the subject alive, continually advertising Fence, not only in the newspapers but with circulars sent out by mail and wrapped up with packages.
3. Get interested in Wire Fence yourself or have a special Fence clerk who will get interested. Learn all you can about your Fence and all other kinds. Buy as many Fence stretchers as your customers demand and loan them to purchasers of Fence. Have your Fence man make house to house canvass among your farmer customers or Fence users.
4. Always have a price on Fence (not put up) and make one price to all, regardless of quantity. Use printed price lists attractively gotten up and samples of Fence stapled on frames 18 inches wide by 4 and 5 feet high.

Loaning Stretchers

From a House in Kentucky:

We started to handle Woven Wire Fence about ten years ago. Our first purchase was one 20-rod roll. Our last purchase was 46 car loads, amounting to about 200,000 rods. We attribute our success in the selling of Fence to advertising in the country papers published in the small surrounding towns. Also to explaining to the farmer that he can put up a Woven Fence cheaper than he can one of Barb or Straight Wire. We show him that it takes 10 strands of Barb Wire, with his posts 8 feet

Facts and Figures

apart to make a hog tight fence, but with the Woven Wire he can put his posts 16 feet apart and have a better fence, thereby saving a post on every 16 feet, which amounts to about 35 cents on every rod of fence he puts up. Our opinion is that for a merchant to make the Fence business profitable he has to get the exclusive sale of a first class Fence for one or more counties. He can then demand a good profit and has no competition.

From a Merchant in Iowa:

We have been handling Field Fencing for the past seven years and have found it a satisfactory and profitable line to handle. We feel it is a line that properly belongs to a Hardware store although we know a great many lumber dealers, throughout Iowa particularly, who are selling Field Fencing. We tried the plan of canvassing this fall. Although we did our work after the Fence season was practically over, the results were very gratifying. We expect to continue this method of selling Field Fencing and think it will prove to our decided advantage. We certainly believe that it would prove to the advantage of any Hardware merchant to take up Field Fencing, if he can secure the agency for the right make, buy it in carload lots and go after the business.

Gratifying Results

Lots of Talking

From another Iowa firm: We have sold quite a lot of Field Fence, but it would be impossible for us to suggest a way for other people to sell Woven Wire Fence. Our experience is this: in order to sell Field Fence you must be able to show up your Fence the same as any other line of goods, and talk, and do lots of it, and at the same time say nothing that you cannot show your man. We have sold lots of different makes of Fencing and used to think that if we could only get the agency for a certain Fence we could do more business, but we find that is a very great mistake. Get a Fence the other fellow hasn't and don't be afraid to talk and you will do the Fence business regardless of price and make of Fence.

Increases Trade with Farmers.

Many merchants notice that a line of Fencing is valuable not only for its own profit but for the introduction it gives to prosperous farmers who own their own land and make the most desirable customers. A firm in Indiana writes:

About five years ago we added a line of Field Fencing and have found it to be a very satisfactory and profitable business. It requires constant canvassing and considerable work and is by no means a line without competition. There are a great many different kinds of Field Fencing on the market to-day and some of them are good and some of them are not of much value. We investigated the matter thoroughly and selected what we thought was the best regardless of price. We have succeeded in building up a Fence business that surprised even ourselves. Our business last year was over 100 carloads and this year we expect it to reach 150 carloads. We find also that it brings to our store farmers who buy other goods and our men who canvass selling the Fence sell other goods. We believe that every Hardware dealer who caters to farmers' trade should put in a good line of Fence.

From a Merchant in Illinois:

Field Fencing is surely a line that can be advantageously handled by Hardware merchants. We have had experience for several years, the last few years selling from 10 to 15 carloads a year. There is a good margin of profit to the dealer and a nice clean business that usually increases trade in other lines, as farmers who buy Fencing own their own farms and generally make good customers.

The Increasing Demand

for Fencing is generally recognized. Many well posted Hardwaremen hold that it will eventually supplant Barb Wire almost entirely, having already superseded it to a considerable extent. One merchant in the Central States says:

We have been selling Field Fence for a number of years and during that time have sold many miles. Woven Fencing has grown in favor among the farmers and is replacing Barb Wire, which many farmers have discontinued using. We believe Woven American Fencing is a good line for the Hardware merchant. The

profit is being cut down somewhat, but the quantity handled is increasing.

From a Wisconsin Merchant:

We have been selling Field Fencing for the last eight years and it has almost taken the place of Barb Wire. Eight years ago we sold three cars a year of the Barb Wire; now we sell one-half car and the balance is all Field Fence. Barb Wire injured and killed a good many high priced horses. Field Fencing does not do this and the price is also lower than it has been.

A Large Reduction**From a Large New York Implement House:**

Wire Field Fencing is fast taking the place of all other patterns. Our trade in this line has shown a very large increase within the past season, and we look for a still larger business in the coming year, and we think that it will pay all manufacturers to advertise this special line, as we think there is a large future business. We also recommend all dealers carrying a sample roll. Then they have something to talk on, and we find where a dealer has had samples he has made sales where others who tried to sell through their catalogue have failed.

Sample Rolls**From a Jobber in the South:**

We think it absolutely certain that the tonnage in Woven Wire Fencing will rapidly increase. The clearing up of the forests and the high price of lumber will make it necessary to use Wire Fencing instead of lumber. It does not require a second thought to realize that this state of affairs has come to stay. Aside from this fact, the farmers all over the country are in so much better circumstances than ever before that they will naturally look to improvement of their farms. There is no question as to the superiority of Wire Fencing over Barb Wire or Rails. We would not be surprised to see in a short time the tonnage of Woven Wire Fencing far exceed that of Barb Wire.

From a Firm in the Northwest:

We have handled Field Fencing for the last eight years and find that it can be very successfully handled in connection with the Hardware business. We do not as yet use as much of it in this section of the country as they use farther east and south, as we still sell a large amount of Barb Wire, but Field Fencing is coming in use generally, and we think it will not be a great while until it has superseded all other kinds of fencing in this section.

Will Supersede**Views of a New England Merchant.**

We have sold Field Fencing for some time, to our advantage, we think. As to whether it can be satisfactorily handled by the retail Hardware merchant generally is a question as to cheap and convenient storage facilities and a promising field to work. As far as we are informed, this style of Fencing has been satisfactory from every point of view to the purchasers. None but the wealthy are enjoying newly made stone walls nowadays, and this particularly applies to old New England, where they were once built, it would seem (in some places), just for exercise. We find that progressive farmers and landholders are giving Field Fencing the preference when building anything but a makeshift fence. Of course Field Fencing is bulky, heavy merchandise which, on account of strong competition, yields but a fair to small margin of profit. But this is an age of Wire Fences, and we think Field Fencing would be fairly satisfactory to those who have storage facilities to handle it cheaply and easily and a liberal amount of energy to bring its merits and advantages to the attention of their customers.

Field Fence Preferred**Encouraging Reports**

of a general nature are also received from many merchants who have been handling Woven Wire Fence for several years. The following extracts may be quoted:

We have handled Field Fence for years. We handle about three cars each year and derive a nice profit from it. We handle it the same way as we do any other line. We advertise and push it and talk it. We think we have the Fence and make others think so too.

We have handled Field and Lawn Fence here for several years and consider it a profitable line. Think it should be part of Hardware stock, especially in the rural districts. We buy our Fencing in carload lots and find it a ready seller at a reasonable margin of profit.

Replacing Barb Wire

We have sold Field Fence for many years and have always enjoyed a very good trade and increased the same from year to year. We consider Wire Fence a very good addition to our business and would very much dislike to give it up.

We have been handling Wire Field Fencing for the past six years and find it a profitable article to sell. The margin of profit on a single rod is small, but Fencing is usually sold in quantities that justify handling at a low per cent. of profit. We have sold from four to eight carloads of it a year, with very little extra trouble or expense, and it has made us some money, which, of course, is what we are all looking after in business. We consider it a fine line for Hardware merchants to sell.

Pointers for Fence Sellers.

Canvass the Farmers.

From a merchant in Minnesota: Our experience has been that to canvass the farmers in the country is a very good way to sell Fencing. We put the matter before them at all times, for that matter—the importance of having their entire fields fenced with Woven Fencing and the benefit of same.

Spring Orders When Other Trade is Slack.

From a merchant in Michigan: We have handled Field Fencing in connection with our implement trade for the last four years, and find it a very profitable line to handle as we push for spring orders when our other trade is slack.

Avoid Cutting Rolls.

From a merchant in Connecticut: We find among those who demand Fencing some who own small places and do not require a 20-rod roll. If the dealer begins cutting rolls, same as we do Poultry Netting, it would make a great many remnants and some of the profit would be eaten up by the remnants left on hand. This the dealer, we think, should avoid. We are of the opinion that Field Fencing is something that is going to be used more and more and is a business which a dealer who has the space would do well to engage in.

Getting Settlement.

From a merchant in Indiana: Our Wire Fence business has been fine. We have averaged about nine cars each year since 1901. Our profit is good and in most cases when the Fence goes out our trouble ceases. Once in a great while we sell to a kicker. We make an effort to get settlement when Fence goes out either by cash or note. We can see no reason why the trade on Fence should let up for the next five years, as 90 per cent. of the farmers in our country have poor fences.

H. MUELLER MFG COMPANY.

IN accordance with its annual custom the H. Mueller Mfg. Company called its traveling salesmen in off the road for a ten days' conference and school of instruction the first of the year. The meeting was held at the home office of the company, at Decatur, Ill., and all of the 20 salesmen and the officers of the company were in attendance. The purpose of the gathering was to thoroughly inform the men in the details of the business that might be to their advantage in selling goods. Incidentally the visit of the salesmen was made pleasant by a number of social features, among them being the annual banquet of the company to the salesmen and the dinner to the officers of the company and their wives. The names of the traveling men and their headquarters for the present year are: From Decatur office, Mon T. Whitney, Chicago, Ill.; W. B. Ford, Birmingham, Ala.; Francis C. O'Neill, Quincy, Ill.; W. N. Dill, Pacific Coast representative; Horace F. Clark, Grand Rapids, Mich.; D. E. Rowley, Indianapolis, Ind.; F. J. Murphy, St. Louis, Mo.; W. C. Heinrichs, Chicago, Ill.; Murry F. Kirkwood, Kansas City, Mo.; J. H. McCormick, Huron, Ohio; F. B. Mueller, Decatur, Ill.; James Smith, Pittsburgh, Pa.; H. E. Paxton, Decatur, Ill. From New York office, W. D. Malane, Brooklyn, N. Y.; Arthur C. Pilcher, Springfield, Mass.; J. W. Pine, Rochester, N. Y.; Charles Tillinghast, Woodhaven, L. I., N. Y.; C. T. Ford, Washington, D. C.; George A. Caldwell, Boston, Mass.; W. F. McCarthy, Philadelphia, Pa.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c. relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate.

FROM P. H. MCGINNIS, Princeton, Iowa, who has acquired the Hardware business of Baxter & Baxter.

FROM G. P. LAMBERTON COMPANY, which has purchased the business of Newton Hardware Company at Paden, I. T.

FROM J. C. WYLIE COMPANY, Emory, Texas, which handles Hardware, Stoves, Agricultural Implements and Sporting Goods.

FROM J. H. ABBOTT, who has engaged in the Hardware, Stove, Implement, Paint and Sporting Goods business at Granger, Wash.

FROM H. T. CLARK COMPANY, Massena, N. Y., who handle Shelf and Heavy Hardware, Tinware, Paints, Sporting Goods and Agricultural Implements.

FROM W. T. GODFREY, formerly of Shoshone, Idaho, who has moved his stock of Hardware, Stoves, Paints and Sporting Goods to Weiser, Idaho.

FROM J. H. SEWELL, who has established a branch store at Parnell, Mo., in connection with his Hardware business at Burlington Junction, Mo.

FROM MCCARTNEY BROS., who have opened a Hardware, Stove, Paint, Harness and Sporting Goods store in Ashland, Neb., succeeding J. C. Wright.

FROM O'NEALL HARDWARE COMPANY, Clarendon, Texas, which has succeeded to the business of Witt-Richardson Hardware & Implement Company.

FROM AMBROZ BROS. & Co., who have bought the Hardware business of F. Koppel, Monowi, Neb.

FROM BRUEGGEMANN HARDWARE COMPANY, 4054 Olive street, St. Louis, Mo., which has been incorporated with a capital of \$15,000 to conduct a wholesale and retail Hardware, Tinware, Paint, Sporting Goods and Electrical Supply business.

FROM H. PILL & BRO., INCORPORATED, Cambridge, Mass., which has been incorporated with a \$3000 capital to deal in Hardware, Cutlery and House Furnishing Goods.

F. E. MYERS & BRO.'S FIRE.

THE fire which visited the plant of F. E. Myers & Bro., Ashland, Ohio, last week, was fortunately confined entirely to their storehouse containing finished goods. The manufacturing department, the capacity of which has been recently largely increased and which is stored full of raw material, was not damaged, this being true also of their power house and general equipment. Accordingly shipments will not be delayed more than a week from the fire.

At a meeting of the stockholders of the Michigan Wire Cloth Company, Detroit, Mich., held recently, officers were elected as follows: President, Wm. J. Chittenden; vice-president, Frank H. Croul; secretary and treasurer, Hugh O'Connor; superintendent, Chas. F. Purdie. The officers, with George H. Hopkins and W. H. Brace, constitute the Board of Directors. The company states that the volume of business in 1905 was the best in its history, extending over a period of 30 years, and that indications are for an even better business the present year.

AMERICAN RING COMPANY.

A CATALOGUE for 1906, referring to Brass Furniture Trimmings, Brass Upholstery Nails, Seamless Brass Ferrules, Brass Curtain and Screw Rings, &c., has been placed in the hands of the trade by American Ring Company, Waterbury, Conn. The company also manufactures Sleigh Bells, Cast and Wrought Brass Colonial Candlesticks and a complete line of Bathroom Fixtures.

Sun Mfg. Company.

The Sun Mfg. Company, Columbus, Ohio, maker of wooden ware specialties and other goods, is distributing its catalogue No. 27, devoted principally to coffee mills and money drawers. Attention is called to a new mill, No. 950, which is similar in style to No. 1088, well known to the trade, but being somewhat smaller and lighter can be sold at a very low price. Money drawers for export trade are shown, No. 7 being adapted to English currency and No. 8 to German.

Adler's Pressed Step Ladder.

The pressed step ladder shown in the accompanying cut, with the exception of the steps, is made of 20-gauge open hearth steel sheets, reinforced with heavy drawn bead all around. The bead gives a panel effect, presenting a pleasing and solid appearance, besides adding rigidity and strength. After the ladder is completed it is re-galvanized to make it rustless. No bolts, rivets, nails or screws are used in its construction, all parts being put together with eyelets. The steps are made of No. 1



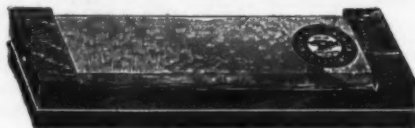
Adler's Pressed Step Ladder.

cotton or basswood. The company explains that while experimenting it used metallic steps of almost every conceivable description, and while it could get them strong enough they would quickly wear through the galvanized surface and rust; also that they would soon become slippery. It has adopted the wooden steps as the most serviceable and satisfactory in every way. The steps are put into the stiles with eyelets and can be replaced without trouble, it is remarked, if broken. The ladder is made with and without metallic bucket shelves, in lengths of 4, 5, 6, 7 and 8 feet. The company states that its pressed ladder will not exceed in weight the best wooden ones, the average weight being 31-6 pounds to the foot. Among the points of excellence claimed for these goods are durability, service, rigidity and handsome appearance. They are offered by H. Adler Company, Carnegie, Pa.

Coverfast Oilstone Boxes.

The Pike Mfg. Company, Pike, N. H., is just putting upon the market oilstone boxes as illustrated herewith. The mounting enables the entire length of the stone to be used and keeps the stone in perfect condition. To get the best results, it is remarked, an oilstone

must be kept clean and always oil moistened, and this is impossible with an unmounted stone or an ordinary loose cover box. The Coverfast consists of a solid hard wood box, which cannot warp, and a strong enameled metal cover, fastened by a pivot hinge, which can be turned under the box instantly. The inside of the cover contains a thick felt pad, which absorbs surplus oil and keeps the stone moist and clean and makes the cover practically air tight when closed. The ends of the box are flush with top of stone, thus enabling the tool to be pushed the entire length of stone without danger of nicking or blunting. It is pointed out that the cover is



Coverfast Oilstone Boxes.

never lost nor in the way, and that the stone is ever clean and moist. These oilstone boxes are offered with either Rosy Red, Lily White or India oilstones, as preferred.

Christy Hoe Safety Razor.

The safety razor here illustrated is made up of three parts: the frame, blade and comb guard. The blades are self-adjusting, and there is an absence of springs, hinges and screws in make-up of the device. The handle has the length necessary to be easily grasped and to enable the owner to use it at the proper angle in all positions. It is pointed out that it is perfectly balanced. The teeth of the comb guard point toward the blade, and the guard is de-



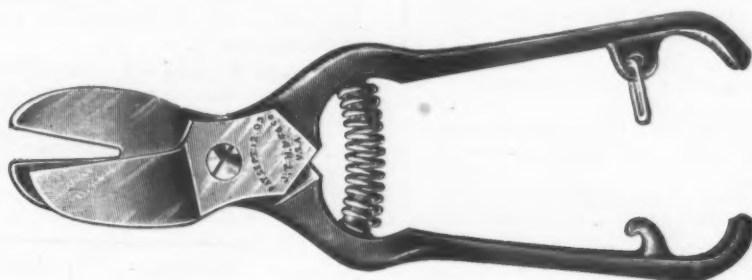
Christy Hoe Safety Razor.

signed to leave the edge of the blade free, with a clear space for lather to pass through upon the top of the blade in the same manner and with the advantage of an ordinary razor. It is explained that the process used in making the blades is new, producing blades of uniform temper and lasting cutting quality. Each razor is packed in a case which is supplied with an especially prepared strop, securely fastened to the top of the case. Extra blades can be secured from the manufacturers, who rehone and restrop blades if desired. The razor is offered by R. J. Christy & Co., Fremont, Ohio.

Steffa's Patent Shield Orange Clipper No. 67.

Wiebusch-Hilger, Limited, 9-15 Murray street, New York City, as sole agents for the J. T. Henry Mfg. Co., are just putting on the market the shield orange clipper, illus-

the length of the base of the apparatus gives a solid foundation. The reel is easily transportable, being used as a barrow, with only the two wheels touching the ground. It is made in two styles, the difference being in the drums, one being slatted in cylindrical form, the other being a cylin-



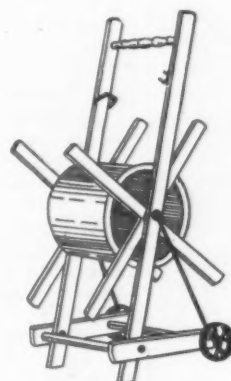
Steffa's Patent Shield Orange Clipper No. 67.

trated herewith. The feature of the clipper which distinguishes it is the slotted lower blade. As a result of its construction the blade acts as a shield to the fruit when the stem of the orange is being cut. The lower blade is extended somewhat beyond the point of the upper blade to prevent the possibility of accidental injury to the fruit by the point of the upper blade in cutting the stem. In common with all of the other goods made by the manufacturer, the clipper is referred to as being high grade, well finished and fitted with exceeding care. The clipper is 6 1/4 inches over all; the blades polished, showing a high degree of finish, and with japanned handles. They are packed in boxes of one dozen each and in cases containing one gross.

Pillman Hose Reel.

A strong feature of the Boston hose reel shown in the illustration is the cylindrical drum, for which important advantages are claimed, especially that, as the hose, when on the reel, rests against no sharp edges or angular surfaces of any kind, there is no tendency to flatten out with the resultant wear. Besides keeping the hose in its natural shape, the drum permits the water to run off as the hose is wound upon the cylinder. Another feature of the reel is the provision made for securing balance, as the weight of the drum full of hose is centrally located, and

der of varnished papier maché. The height of the reel is 3 feet 3 inches and its weight 12 1/2 pounds. It is manu-



Pillman Hose Reel.

factured by the Pillman Hose Reel Company, Incorporated, 523 Washington street, Boston, Mass.

E. E. Truxell has purchased the Hardware, Stove, Paint and Sporting Goods business of C. A. Childs, Meadow Grove, Neb.

PAINTS, OILS AND COLORS**Animal, Fish and Vegetable Oils—**

Linseed, City, raw.....	44	@45
Linseed, City, Boiled.....	45	@46
Linseed, State and West'n, raw.....	42	@43
Linseed, raw Calcutta seed.....	46	@47
Lard, Extra Prime, Winter.....	68	@69
Lard, Extra No. 1.....	48	@49
Lard, No. 1.....	38	@40
Cotton-seed, Crude, f.o.b. mills.....	26	@27 1/2
Cotton-seed, Summer Yellow.....	32 1/2	@33 1/2
Prime.....	32 1/2	@33 1/2
Cotton-seed, Summer Yellow, off grades.....	30	@31
Sperm, Crude.....	48	@50
Sperm, Natural Spring.....	66	@67
Sperm, Bleached Spring.....	61	@62
Sperm, Natural Winter.....	61	@62
Sperm, Bleached Winter.....	61	@62
Tallow, Prime.....	51	@53
Whale, Crude.....	40	@41
Whale, Natural Winter.....	42	@44
Whale, Bleached Winter.....	44	@46
Menhaden, Brown, Strained.....	26	@27
Menhaden, Light, Strained.....	27	@28
Menhaden, Bleached, Winter.....	32	@33
Menhaden, Ex-Bld., Winter.....	31	@32
Menhaden, Southern.....	21	@22
Cocanut, Ceylon.....	6 1/2	@6 3/4
Cocanut, Cochiti.....	6 1/2	@6 3/4
Cod, Domestic, Prime.....	34	@35
Cod, Newfoundland.....	34	@35
Cod, Elaine.....	30	@31
Red, Saponified.....	4 1/2	@4 3/4
Olive, Italian, bbls.....	57	@62
Neatsfoot, primo.....	48	@49
Palm, Logos.....	6 1/2	@6 3/4

Mineral Oils—

Black, 29 gravity, 25@30 cold test.....	10 1/2	@11 1/4
Black, 29 gravity, 15 cold test.....	11 1/4	@12 1/4
Black, Summer.....	10 1/2	@11 1/4
Cylinder, light filtered.....	18	@19
Cylinder, dark filtered.....	16	@17
Paraffine, 903-907 gravity.....	12 1/2	@13
Paraffine, 903 gravity.....	11 1/2	@12 1/2
Paraffine, 883 gravity.....	9 1/2	@9 3/4
Paraffine, Red.....	11 1/2	@12 1/2
In small lots 1/4¢ advance.		

Miscellaneous—

Barytes:		
White, Foreign.....	1 ton	\$17.50@19.00
Amer. floated.....	1 ton	18.00@19.00
Off color, No. 2.....	1 ton	13.50@14.00
Chalk, in bulk.....	1 ton	3.50@3.75
Chalk, in bbls.....	100 lb	@40
China Clay, English.....	1 ton	11.00@17.00
Cobalt, Oxide.....	100 lb	2.50@2.60
Whiting, Common.....	100 lb	.13@.14
Whiting, Gilders.....	100 lb	.50@.55
Whiting, Ex. Gilders.....	100 lb	.55@.60

Putty, Commercial—

In bladders.....	1.65	@1.85
In bbls. or tubs.....	1.15	@1.35
In 1 lb to 5 lb cans.....	2.60	@2.90
In 12 1/2 to 50 lb cans.....	1.45	@1.85

Spirits Turpentine—

In Oil bbls.....	68	@68 1/2
In machine bbls.....	68 1/2	@69

Glue—

Cabinet.....	11	@15
Common Bone.....	7	@9
Extra White.....	18	@24
Foot Stock, White.....	11	@14
Foot Stock, Brown.....	8	@11
German Hide.....	12	@18
French.....	10	@14
Irish.....	13	@16
Low Grade.....	9	@12
Medium White.....	14	@17

Gum Shellac—

Bleached Commercial.....	38	@39
Bone Dried.....	48	@49
Button.....	40	@45
Diamond I.....	46	@50
Fine Orange.....	46	@50
A. C. Garnet.....	50	@52
D. C.....	50	@52
Octagon B.....	42	@45
T. N.....	42	@45
V. S. O.....	54	@55

Colors in Oil—

Black, Lampblack.....	12	@14
Blue, Chinese.....	34	@46
Blue, Prussian.....	32	@38

Blue, Ultramarine.....	13	@16
Brown, Vandyke.....	11	@14
Green, Chrome.....	10	@15
Green, Paris.....	24	@24
Sienna, Raw.....	12	@15
Sienna, Burnt.....	12	@15
Umber, Raw.....	11	@14
Umber, Burnt.....	11	@14

White Lead, Zinc, &c.—

Lead, English white, in Oil.....	9 1/2	@9 3/4
Lead, American white, in Oil:		
Lots of 500 lb or over.....	@7 1/4	
Lots less than 500 lb.....	@7 1/2	
In Barrels.....	@6 1/2	
Lead, White, in oil 25 lb tin		
pails, add to keg price.....	@ 1/2	
Lead, White in oil, 12 1/2 lb tin		
pails, add to keg price.....	@ 1	
Lead, White, in oil, 1 to 5 lb		
ass'ted tins, add to keg price.....	@ 1 1/4	
Lead, American, Terms, For lots 12		
tons and over 1/4¢ rebate; and 2% for		
cash if paid in 15 days from date of		
invoice; for lots of 500 lbs. and over		
2% for cash if paid in 15 days from		
date of invoice, for lots of less than		
500 lbs. net.....	@ 1/2	
Lead, White, Dry, in bbls.....	@ 6 1/2	
Zinc, American, dry.....	4 1/2	@5
Zinc, French:		
Paris, Red Seal, dry.....	9 1/2	
Paris, Green Seal, dry.....	10 1/2	
Antwerp, Red Seal, dry.....	10 1/2	
Antwerp, Green Seal, dry.....	10 1/2	
Zinc, V. M. French, in Poppy Oil:		
Green Seal:		
Lots of 1 ton and over.....	12 1/2	@13 1/2
Lots of less than 1 ton.....	13 1/2	@14 1/2
Zinc, V. M. French, in Poppy Oil:		
Red Seal:		
Lots of 1 ton and over.....	11 1/2	@12 1/2
Lots of less than 1 ton.....	12 1/2	@13 1/2
Discounts—French Zinc—Discounts		
to buyers of 10 bbl. lots of one or mixed		
grades, 1% 25 bbls., 2% 50 bbls., 1%.....		

Dry Colors—

Black, Carbon.....	5	@10
Black, Drop, American.....	4	@6
Black, Drop, English.....	5	@15
Black, Ivory.....	16	@20

Lamp, Com.....	4 1/2	@6
Blue, Celestial.....	4	@6
Blue, Chinese.....	29	@32
Blue, Prussian.....	27	@30
Blue, Ultramarine.....	4 1/2	@15
Brown, Spanish.....	1 1/2	@1
Carmine, No. 40.....	\$3.50	@3.60
Green, Chrome, ordinary.....	3 1/2	@6
Green, Chrome, pure.....	17	@25
Lead, Red, bbls., 1/2 bbls. and kegs:		
Lots 500 lb or over.....	@7 1/4	
Lots less than 500 lb.....	@7 1/2	
Litharge, American, bbls.....	@7 1/4	
Ocher, American.....	1 ton	\$8.50@16.00
Ocher, American Golden.....	2 1/2	@3 1/2
Ocher, French.....	1 1/2	@2 1/2
Ocher, Foreign Golden.....	3	@4
Orange Mineral, English.....	10	@12
Orange Mineral, French.....	10 1/2	@12 1/2
Orange Mineral, German.....	8 1/2	@10
Orange Mineral, American.....	8 1/2	@9 1/2
Red, Indian, English.....	4 1/2	@5 1/2
Red, Indian, American.....	3	@3 1/2
Red, Turkey, English.....	4	@10
Red, Tuscan, English.....	7	@10
Red, Venetian, Amer.....	100 lb	\$0.50@1.25
Red, Venetian, English.....	100 lb	\$1.15@1.75
Sienna, Italian, Burnt and		
Powdered.....	3	@9 1/2
Sienna, Ital. Raw, Powd.....	3	@6 1/2
Sienna, American, Raw.....	1 1/2	@2
Sienna, American, Burnt and		
Powdered.....	1 1/2	@2
Talc, French.....	1 ton	\$15.00@30.00
Talc, American.....	1 ton	\$15.00@25.00
Terra Alba, French.....	100 lb	\$0.50@1.00
Terra Alba, English.....	100 lb	\$0.50@1.00
Terra Alba, American.....	100	@80
No. 1.....	70	@80
Terra Alba, American.....	100	@80
No. 2.....	60	@85
Umber, Turkey, Brit. & Pow.....	2 1/2	@3 1/2
Umber, Turkey, Raw & Pow.....	2 1/2	@3 1/2
Umber, Burnt, Amer.....	1 1/2	@2
Umber, Raw, Amer.....	1 1/2	@2
Yellow Chrome.....	12	@24
Vermilion, American Lead.....	10	@25
Vermilion, Quicksilver, bulk.....	@65	
Vermilion, Quicksilver, bags.....	@66	
Vermilion, English, Import.....	75	@80
Vermilion, Chinese.....	\$0.90	@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 $\frac{1}{2}$ @ 33 $\frac{1}{2}$ & 10% signifies

that the price of the goods in question ranges from 33 $\frac{1}{2}$ per cent. discount to 33 $\frac{1}{2}$, and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Domestic, $\frac{1}{2}$ doz. \$3.00.....33 $\frac{1}{2}$ %
North's.....10%
Zimmerman & See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvils..... $\frac{1}{2}$ lb 6%
Hay-Budden, Wrought..... $\frac{1}{2}$ lb 6%
Horseshoe brand, Wrought..... $\frac{1}{2}$ lb 6%
Trenton..... $\frac{1}{2}$ lb 6%

Imported—

Peter Wright & Sons..... $\frac{1}{2}$ lb 10%
Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15&10%

Apple Parers—See Parers,

Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....33 $\frac{1}{2}$ %

Augers and Bits—

Com. Double Spur.....75&10&5%
Jennings' Patn., reg. finish.....50&10&60%

Black Lip or Blued.....60&10%

Boring Mach. Augers.....70&10%

Car Bits, 12-in. Twist.....50&10%

Ford's Auger and Car Bits.....40&5%

Forstner Pat. Auger Bits.....25%

C. E. Jennings & Co.:—

No. 10, ext. lip, R. Jennings' list.....25%

No. 30, R. Jennings' list.....40&7 $\frac{1}{2}$ %
Russell Jennings'.....25&10&2 $\frac{1}{2}$ %
L. Hommedieu's.....65%

Mayhew's Countersink Bits.....45%

Millers Falls.....50&10&7 $\frac{1}{2}$ %

Ohio Tool Co.'s Bailey Auger.....40&10%

Car Bits.....20%

Pugh's Black.....20%

Pugh's Jennings' Pattern.....60%

Snell's Auger Bits.....60%

Snell's Bell Hangers' Bits.....60%

Snell's Car Bits, 12-in. twist.....60&10%

Wright's Jennings' Bits.....50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's small, \$18; large, \$26.....50&10%

Clark's Pattern, No. 1, $\frac{1}{2}$ doz. \$26.....65%

Ford's, Clark's Pattern.....60&5%

C. E. Jennings & Co., Steer's Patn.....25%

Swan's.....60%

Gimlet Bits—

Per gro.

Common Dble. Cut.....\$3.00@3.25

German Pattern, Nos. 1 to 10.....\$4.00; 11 to 13, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$5.50@6.00

Ames.....25&10%

Universal.....20%

Wood's Universal.....25%

Ship Augers and Bits—

Ship Augers.....\$5.50@6.00

Ford's.....33 $\frac{1}{2}$ %

C. E. Jennings & Co. 1.....15%

L. Hommedieu's.....65%

Watrous.....35&5%

Ohio Tool Co.'s.....40%

Snell's.....40%

Awl Hafts—See Handles,

Mechanics' Tool.

Awls—

Brad Awls:

Handled.....gro. \$2.75@3.00

Unhanded, Shlivered.....gro. 63@66

Unhanded, Patent.....gro. 66@70

Peg Awls:

Unhanded, Patent.....gro. 31@34

Unhanded, Shlivered.....gro. 63@70

Scratch Awls:

Handled, Com.....gro. \$3.50@4.00

Handled, Socket.....gro. \$11.50@12.00

Hurwood.....40%

Awl and Tool Sets—See

Sets, Awl and Tool.

Axes—

See Grease, Axle

Iron or Steel

Concord, Loose Collar.....14&10%

Concord, Solid Collar.....14&10%

No. 1 Common, Loose.....34@35

No. 1 $\frac{1}{2}$ Com., New Style.....44 $\frac{1}{2}$ %

No. 2 Solid Collar.....40&7 $\frac{1}{2}$ %

Half Patent:

Nos. 7, 8, 11 and 12.....75&10&5%

Nos. 13 to 14.....70&10&75&5%

Nos. 15 to 18.....75&10&75&10&5%

Nos. 19 to 22.....75&10&75&10&5%

Boxes, Axle—

Common and Concord, not turned.....1b. 14@54

Common and Concord, turned.....1b. 54@64

Half Patent.....1b. 84@94

Bait— Fishing—

Hendryx:

A Bait.....20%

B Bait.....25%

Competitor Bait.....20&5%

Balances— Sash—

Caldwell new list.....50%

Pullman.....50&10&60%

Spring—

Spring Balances.....50&10&60%

Chatillon's:

Light Spg. Balances.....40&10%

Straight Balances.....40%

Circular Balances.....50%

Large Dial.....30%

Barb Wire—See Wire, Barb.

Bars— Crow—

Steel Crowbars, 10 to 40 lb.....per lb., 3@34

Towel—

No. 10 Ideal, Nickel Plate..... $\frac{1}{2}$ gro. \$8.50

Beams, Scale—

Scale Beams.....40&10&50%

Chatillon's No. 1.....30%

Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:

No. 12 Wire Coppered $\frac{1}{2}$ doz. \$0.85;

Tinned.....\$1.00

No. 11 Wire Coppered $\frac{1}{2}$ doz. \$1.10;

Tinned.....\$1.20

No. 10 Wire Galvanized..... $\frac{1}{2}$ doz. \$1.75

Western W. G. Co.:

No. 1 Electric..... $\frac{1}{2}$ gro. \$7.80

No. 2 Buffalo..... $\frac{1}{2}$ gro. \$9.00

No. 3 Perfection Dust..... $\frac{1}{2}$ gro. \$8.00

Egg—

Holt-Lyon Co.:

Holt, No. A, Japanned..... $\frac{1}{2}$ doz. \$1.20

Holt, No. 1, Tinned..... $\frac{1}{2}$ doz. \$1.50

Holt, No. B, Japanned..... $\frac{1}{2}$ doz. \$2.00

Holt, No. 2, Tinned..... $\frac{1}{2}$ doz. \$2.25

Lyon, No. 2, Japanned..... $\frac{1}{2}$ doz. \$1.25

Lyon, No. 3, Japanned..... $\frac{1}{2}$ doz. \$1.50

Taplin Mfg. Co.:

No. 60 Improved Dorer.....\$6.00

No. 75 Improved Dorer.....\$6.50

No. 100 Improved Dorer.....\$7.00

No. 102 Improved Dorer, Tin'd.....\$8.50

No. 150 Improved Dorer, Hotel.....\$15.00

No. 152 Imp'd Dorer, Hotel, T'd.....\$17.00

No. 200 Imp'd Dorer Tumbler.....\$8.50

No. 202 Imp'd Dorer Tumbler, T'd.....\$9.50

No. 300 Imp'd Dorer Mammoth.....\$25.00

Western W. G. Co. Buffalo.....\$7.00

Wonder (R. M. W. Co.)..... $\frac{1}{2}$ gro. net, \$4.00

Bellows—

Blacksmith, Standard List.....60&10@70&10%

Hand—

Inch.....6 7 8 9 10

Doz.....\$4.75 5.70 6.65 7.60 8.85

Molders—

Inch.....9 10 11 12 14

Doz.....\$8.00 9.00 10.50 12.50 14.50

Bells— Cow—

Ordinary goods.....75&5@75&10&5%

High grade.....70&10@70&10&5%

Jersey.....75&10%

Texas Star.....50%

Door—

Abbe's Gong.....45%

Burton Gong.....50%

Home, R. & E. Mfg. Co.'s.....55&10%

Lever and Pull, Sargent's.....60&10&10%

Trap Gong.....50&10@50&10&5%

Yankee Gong.....35%

Hand—

Hand Bells, Polished, Brass.....60&10%

White Metal.....80%

Nickel Plated.....50&10&60%

Sticks.....60&10@70&10%

Cone's Globe Hand Bells.....34@35%

Silver Chime.....33&10@35%

Miscellaneous—

Farm Rells.....1b. 24@

Steel Alloy Church and School.....50&10@60%

American Tube & Stamping Co. Gongs.....75%

Table Call Bells.....50@50&10%

Belting— Leather—

Extra Heavy, Short Lap.....60&5%

Regular Short Lap.....60&10&5%

Standard.....70%

Light Standard.....70&5%

Cut Leather Lacing.....50&5%

Leather Lacing Sides, per sq. ft. 25¢

Rubber—

Agricultural (Low Grade).....75&10&5%

Common Standard.....70&10&10%

Standard.....60&5@60&10%

Extra.....60&10&5%

High Grade.....50&5@50&10%

Bench Stops—

See Stops, Bench

Benders and Upsetters,

Tire—

Detroit Perfected Tire Bender.....40%

Detroit Stoddard's Lightning Tire

Upsetters, No. 1, \$4.25; No. 2, \$7.25;

No. 3, \$10.50; No. 4, \$16.25; No. 5,

\$28.50.

Green River Tire Benders and Up-

setters.....20%

Bicycle Goods—

John S. Long's Son's 1902 list:

Chain.....50%

Parts.....50%

Spokes.....50%

Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills,

&c.—See Augers and Bits.

Blocks— Tackle—

Common Wooden.....70&10@75%

Hartz St. Tackle Blocks.....50&50&5%

B. & L. B. Co.:

Boston Wood Snatch 50%; Eclipse

Steel, 75%; Hollow Steel, 50&10%;

Star Wire Rope, 50%; Tarbox Metal

Snatch, 50%; Tarbox New Style

Steel, 50&10%; Wire Rope Snatch,

50%.

Lane's Patent Automatic Lock and

Junior.....30%

Stowell's Novelty Mal. Iron.....50&10%

Stowell's Self Loading.....60%

See also Machines, Hoisting.

Burke's Blunt.....4@4 1/2¢
 Burke's Sharp.....4@4 1/2¢
 Gautier, Blunt.....4@4 1/2¢
 Gautier, Sharp.....4@4 1/2¢
 Perkins, Blunt Toe.....4@3 1/2¢
 Perkins, Sharp Toe.....4@4 1/2¢

Can Openers—

See Openers, Can.

Cans, Milk—

Illinois Pattern.....\$1.35 1.85 2.05 each.
 New York Pattern.....1.50 2.20 2.45 each.
 Baltimore Pattern.....1.50 2.20 2.45 each.
 Dubuque.....1.35 1.60 1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:
 3 5 10 gal.
 \$18.00 60.00 125.00 gro., net.

Caps, Percussion—

Eley's E. B.....52@55¢
 G. D.....per M 34@35¢
 F. L.....per M 40@42¢
 G. H.....per M 48@50¢
 Musket.....per M 62@63¢

Primers—

Berdan Primers, \$2 per M.....90%
 B. L. Caps (Sturtevant Shells)
 \$2 per M.....20%
 All other primers per M \$1.52@1.60

Cartridge—

Blank Cartridges:
 32 C. F., \$5.50.....1045¢
 32 C. F., \$7.00.....1045¢
 22 cal. Rim, \$1.50.....1045¢
 32 cal. Rim, \$2.75.....1045¢
 B. B. Caps, Con. Ball, \$1.50.....1149¢
 B. B. Caps, Round Ball.....1149¢
 Central Fire.....25¢
 Target and Sporting Rifle.....1545¢
 Primed Shells and Bullets.....1545¢
 Rim Fire, Sporting.....50¢
 Rim Fire, Military.....1545¢

Casters—

Bed.....70@70¢10¢
 Plate.....60¢10¢60¢10¢5¢
 Philadelphia.....75@75¢10¢
 Acme, Ball Bearing.....33¢
 Boss Anti-Friction.....70¢10¢
 Gem (Roller Bearing).....80¢
 Martin's Patent (Phoenix).....45¢
 Standard Ball Bearing.....45¢
 Tucker's Patent low list.....50¢
 Yale (Double Wheel) low list.....50¢

Cattle Leaders—

See Leaders, Cattle.

Chain, Coil—

American Coil, Straight Link:
 5-16 3/4 6-16 3/4 7-16 3/4 9-16
 \$8.60 5.80 4.85 4.10 3.95 3.85 3.80
 3/4 3/4 1/2 1 1/2 1 1/2 1 1/2 inch.
 \$3.75 3.50 3.55 3.70
 German Coil.....60¢10¢10¢70¢
 Halter Chains.....60¢10¢60¢10¢
 German Pattern Halter Chains,
 list July 2, '97.....60¢10¢10¢
 Covert Mfg. Co.....35¢45¢
 Covert's Saddlery Works.....70¢
 Halter.....70¢

Cow Ties—

See Halters and Ties.

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
 6 1/2-6-3, Str't, with ring \$24.50
 6 1/2-6-2, Str't, with ring \$25.50
 6 1/2-8-2, Str't, with ring \$29.50
 6 1/2-10-2, Str't, with ring \$34.00
 NOTE—Add 2c per pair for Hooks.
 Twist Traces 2c per pair higher than
 Straight Link.

Eastern Standard Traces, Wag-
 on Chain, &c.....60¢10¢

Miscellaneous

Jack Chain, list July 10, '93:
 Iron.....60¢10¢60¢10¢70¢
 Brass.....60¢10¢60¢10¢10¢
 Safety Chain.....75@75¢10¢
 Gal. Pump Chain.....1b. 4@4 1/2¢
 Covert Mfg. Co.:
 Breast.....40¢
 Halter.....40¢
 Hoel.....40¢
 Reel.....40¢
 Stallion.....40¢
 Covert Sad. Works:
 Breast.....70¢
 Hold Back.....70¢
 Reel.....70¢
 Onaida Community:
 Am. Dog Leads and Kennel Chains,
 40¢40¢5¢
 Niagara Dog Leads and Kennel
 Chains.....45¢60¢5¢
 Wire Goods Co.:
 Dog Chain.....70¢10¢
 Universal Dbl-Jointed Chain.....50¢

Chain and Ribbon, Sash—

Onaida Community:
 Copper Chain.....60¢5¢
 Steel Chain.....60¢
 Pullman:
 Bronze Chain.....60¢
 Steel Chain.....60¢10¢
 Sash Chain Attachments, per set. 8¢
 Aluminum Sash Ribbon, per 100
 ft.....\$1.25@3.00
 Sash Ribbon Attachments, per set. 8¢

Chalk—(From Jobbers.)

Carpenters' Blue.....gro. 38@40¢
 Carpenters' Red.....gro. 35@35¢
 Carpenters' White.....gro. 28@30¢
 See also Crayons.

Checks, Door—

Bardley's.....45¢
 Eclipse.....60¢10¢
 Pullman, per gro.....\$4.00
 Russwin.....60¢

Chests, Tool—

American Tool Chest Co.:
 Boy's Chests, with Tools.....55¢
 Youth's Chests, with Tools.....40¢
 Gentlemen's Chests, with Tools.....30¢
 Farmers' Carpenters', etc., Chests,
 with Tools.....20¢

Machinists' and Pipe Fitters'
 Chests, Empty.....50%
 Tool Cabinets.....50%
 C. E. Jennings & Co.'s Machinists'
 Tool Chests.....33¢40¢

Chisels—

Socket Framing and Firmer
 Standard List.....75@75¢10¢
 Buck Bros.....30¢
 Charles Buck.....30¢
 C. E. Jennings & Co. Socket Firmer
 No. 10.....60¢
 C. E. Jennings & Co. Socket Fram-
 ing No. 15.....60¢
 Ohio Tool Co.....70¢
 Swan's.....75¢
 L. & I. J. White.....30¢30¢5¢
 L. & I. J. White, Tanged.....25¢5¢

Tanged—

Tanged Firmers.....33 1/3-34¢
 Buck Bros.....35¢
 Charles Buck.....35¢
 C. E. Jennings & Co. Nos. 191, 181, 25¢

Cold—

Cold Chisels, good quality, 13¢15¢
 Cold Chisels, fair quality, 11¢12¢
 Cold Chisels, ordinary.....9¢10¢

Chucks—

Almond Drill Chucks.....35¢
 Almond Turret Six-Tool Chuck.....35¢
 Beach Pat., each \$8.00.....35¢
 Empire.....25¢
 Blacksmiths'.....25¢
 Jacobs' Drill Chucks.....25¢
 Pratt's Positive Drive.....25¢
 Skinner Patent Chucks.....50¢
 Independent Lathe Chucks.....50¢
 Combination.....50¢
 Drill Chucks, New Model.....30¢
 Drill Chucks, Standard.....45¢
 Drill Chuck, Skinner Pat., all sizes.....35¢
 Drill Chucks, Positive Drive.....30¢
 Planer Chucks.....25¢
 Face Plate Jaws.....40¢
 Standard Tool Co.:
 Improved Drill Chuck.....45¢
 Union Mfg. Co.:
 Combination.....50¢
 Czar Drill.....35¢
 Combination Geared Scroll.....40¢
 Geared Scroll.....50¢
 Independent.....50¢
 Independent Steel.....40¢
 Union Drill.....45¢
 Universal.....50¢
 Independent Iron F. Plate Jaws.....40¢
 Independent Steel F. Plate Jaws.....40¢
 Westcott Patent Chucks:
 Lathe Chucks.....50¢
 Little Giant Auxiliary Drill.....50¢
 Little Giant Double Grip Drill.....50¢
 Little Giant Drill, Improved.....50¢
 Onaida Drill.....50¢
 Scroll Combination Lathe.....50¢

Clamps—

Adjustable Hammers.....20¢20¢5¢
 Cabinet, Sargent's.....50¢10¢
 Carriage Makers', P. S. & W.
 Co.....40¢10¢25¢
 Carriage Makers', Sargent's.....40¢
 Besly, Parallel.....33¢4¢10¢
 Lineman's, Utica Drop Forge & Tool
 Co.....40¢
 W. C. Shank, Hammer.....40¢10¢
 Saw Clamps, see Vices, Saw Filers.

Cleaners, Drain—

Iwan's Champion, Adjustable.....55¢
 Iwan's Champion, Stationary.....4¢

Sidewalk—

Star Socket, All Steel.....\$4.05 net
 Star Shank, All Steel.....\$3.24 net
 W. & C. Shank, All Steel, \$4 doz.,
 7 1/2 in., \$3.00; 8 in., \$3.25.

Cleavers, Butchers'—

Foster Bros.....30¢
 New Haven Edge Tool Co.....45¢
 Fayette R. Plumb.....33¢33¢10¢
 L. & I. J. White.....30¢

Clippers, Horse and

Sheep—

Chicago Flexible Shaft Company:
 '98 Chicago Horse, each.....\$9.75
 1902 Chicago Horse, each.....\$10.75
 20th Century Horse, each.....\$5.00
 Lightning Belt Horse, each.....\$15.00
 Chicago Belt Horse, each.....\$20.00
 Stewart's Enclosed Gear
 Horse, each.....\$4.75
 Stewart's Patent Sheep Shear-
 ing Machine, each.....\$12.75

Clips, Axle—

Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire

—See Wire, &c.

Cocks, Brass—

Hardware list:

Compression, Plain Bibbs,
 Globe, Kerosene, Racking,
 &c., Cocks.....75@75¢45¢

Coffee Mills—

See Mills, Coffee.

Collars, Dog—

Nickel Chain, Walter B. Stevens &
 Son's list.....40¢
 Leather, Walter B. Stevens & Son's
 list.....60¢

Combs, Curry—

Metal Stamping Co.....40¢

Mane and Tail—

Covert's Saddlery Works.....60¢10¢

Compasses, Dividers, &c.

Ordinary Goods.....75¢5¢75¢10¢
 Bemis & Call Hdw. & Tool Co.:
 Dividers.....65¢
 Calipers, Double.....65¢
 Calipers, Inside or Outside.....65¢
 Calipers, Wing.....65¢
 Compasses.....50¢
 Wm. Schollhorn Co.:
 Excelsior Dividers.....60¢
 Lodi Dividers.....75¢

Conductor Pipe—

L. C. L. to Dealers:

Territory: Galvanized
 Galv. Charcoal
 Steel Iron Copper.

Eastern:
 70¢12 1/2% 60¢10% 50%

Central:
 70¢5% 60¢9 1/2% 40¢10 1/2%

Southern:
 65¢12 1/2% 50¢13% 40¢12 1/2%
 So. Western
 60¢15% 50¢7% 40¢10%
 Copper:
 Eastern.....50¢10¢
 Central.....50¢7 1/2%
 Southern.....50¢5¢
 So. Western.....50¢2 1/2%
 Terms, 60 days; 2% cash 10 days. Fac-
 tory shipments generally delivered.
 See also Eave Troughs.

Coolers, Water—

Gal. each.....2 3 4 6 8
 Labrador.....\$1.20 \$1.50 \$1.80 \$2.10 \$2.70
 Gal.....3 4 6 8 9
 Iceland.....\$1.80 \$2.10 \$2.40 \$3.00
 Gal.....2 3 4 6 8
 Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.90 \$3.90
 Galvanized, Lined, side handles,
 Gal.....2 3 4 6 8
 Each.....\$1.35 \$2.15 \$2.40 \$3.30 \$4.15
 White Enameled.....25¢
 Agate Lined.....25¢

Coopers' Tools—

See Tools, Coopers'.

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair
 and heavier, 23¢24¢; lighter
 than 3 lbs. to pair.....25¢26¢

Cord— Sash—

Braided, Drab.....lb. 35¢
 Braided, White, Com., Nos. 8
 to 12, 24¢; No. 7, 24 1/2¢; No. 6,
 25 1/2¢.

Cable Laid Italian.....

lb., A, 18¢; B, 16¢
 Common India.....lb. 10¢10 1/2¢
 Cotton Sash Cord, Twisted, 17¢19¢
 Patent Russia.....lb. 14¢
 Cable Laid Russia.....lb. 15¢
 India Hemp, Braided, lb. 18¢
 India Hemp, Twisted, lb. 12¢13¢
 Patent India, Twisted, lb. 12¢13¢

Amniston Cordage Co.: \$4 doz., 50 ft.,
 Oriole, \$2.00; 50 ft., Columbia, \$0.85;
 50 ft., Victors, \$1.00; 50 ft., 6-Thread,
 \$1.10; 60 ft., 3-Thread, \$0.95; 50 ft.,
 Manila, \$1.40; 60 ft., Jute, \$0.75.
 Pearl Braided, cotton, No. 8, 9, 10,
 24 1/2¢; No. 7, 23 1/2¢; Nos. 8 to 12, 23¢
 Eddystone Braided, Nos. 8, 9 and
 10, 26¢; 7, 25 1/2¢; 6, 25¢.
 Harmony Cable Laid Italian, Nos. 7
 to 10.....\$1.25

Peerless:
 Cable Laid Italian.....14¢
 Cable Laid Russian.....14¢
 Cable Laid India.....12¢
 Braided India.....18¢
 Pullman:
 Wire Sash Cord.....10¢
 Sash Cord Attachments, per doz. 10¢

Sargent, Nos. 8 to 12:
 Braided, Drab Cotton.....\$1.40
 Braided, Italian Hemp.....\$1.40
 Braided, Linen.....\$1.55
 Braided, White Cotton or Spot.....\$1.35
 Massachusetts, White.....\$1.30
 Massachusetts, Drab.....\$1.35
 Phoenix, White, Nos. 8 to 12, 27¢;
 No. 7, 27 1/2¢; No. 6, 28 1/2¢.

Silver Lake:
 A quality, Drab.....40¢
 A quality, White.....35¢
 B quality, Drab.....35¢
 B quality, White.....30¢
 Italian Hemp.....40¢
 Linen.....57 1/2¢

See also Chain and Ribbon.

Wire, Picture—

List Oct., '00.....85¢10¢10¢85¢10¢10¢45¢
 Hendryx Standard Wire Picture Cord,
 85¢10¢45¢

Cradles—

Grain.....40¢12 1/2%

Crayons—

White Round Crayons, gr. 6@6 1/2¢
 Cases, 100 gro., \$5.00 at factory.
 D. M. Steward Mfg. Co.:
 Jumbo Crayons.....gr. 33.50
 Metal Workers' Crayons, gr. 22.50
 Soapstone Pencils, round, flat
 or square.....gr. 11.50
 Rolling Mill Crayons.....gr. 22.50
 Railroad Crayons (composition)
 gr. 22.00 Case lots, 20¢

Zelnicker's Lumber:
 Red, Blue, Green.....\$9 gro. \$6.50
 Black.....\$9 gro. \$6.50
 See also Chalk.

Crooks, Shepherds'—

Fort Madison, Heavy.....\$4 doz. \$7.00
 Fort Madison, Light.....\$4 doz. \$6.50

Crow Bars—See Bars, Crow.

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
 No. 12 M'd'm Knives, 1847.....\$3.50
 Star, Eagle, Rogers & Hamilton
 and Anchor.....\$3 doz. \$3.00
 Wm. Rogers & Son.....\$3 doz. \$2.50

Cutters—Glass—

H. H. Mayhew Co.....40¢
 Red Devil.....50¢
 Smith & Hemenway Co.....50¢
 Woodward.....40¢

Meat and Food—

American.....30%
 Nos. 1 2 3 4 H 5
 Each.....\$5 \$7 \$10 \$25 \$50 \$60
 Enterprise.....25¢25¢7 1/2%
 No. 5 10 12 22 32
 Each.....\$2 \$3 \$2.75 \$4.50 \$6
 Dixon's.....\$4 doz. 40¢50¢
 Nos. 1 2 3 4
 Ideal.....\$14.00 \$17.00 \$19.00 \$30.00
 Little Giant.....\$9 doz. 40¢50¢
 No. 305 312 320 322
 Each.....\$33.00 \$48.00 \$44.00 \$72.00 \$68.00
 N. E. Food Choppers.....25¢
 New Triumph No. 605, \$4 doz. \$24.00
 10¢50¢
 Russwin Food, No. 1, \$24.00, No. 2,
 \$27.00 35¢10¢10¢
 Woodruff's.....\$9 doz. 40¢50¢
 No. 100 150
 Each.....\$15.00 \$18.00
 Enterprise Beef Shavers.....25¢20¢

Slaw and Kraut—

Henry Disston & Sons:
 Slaw, Corn Grater, &c.....40¢
 Kraut Cutters, 21 x 7, 26 x 8, 30
 x 9.....35¢
 Kraut Cutters, 36 x 12, 40 x 12.....40¢
 J. M. Maat Mfg. Co.:
 Slaw Cutters, 1 Knife.....\$3.00
 Combined Slaw Cutter and Corn
 Grater.....\$8.00
 Tucker & Dorsey Mfg. Co.:
 Kraut Cutters.....40¢
 Slaw Cutters, 1 Knife.....\$1.80
 Slaw Cutters, 2 Knife.....\$2.25

Tobacco—

All Iron, Cheap.....doz. \$4.25@4.50
 Enterprise.....25¢30¢
 National, \$4 doz., No. 1, \$21; No. 2,
 \$18.....40¢
 Sargent's, \$4 doz., No. 2.....60¢10¢
 Sargent's, Nos. 12 and 21.....60¢10¢

Washer—

Appleton's, \$4 doz., \$16.00.....50¢10¢10¢

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger, per doz. \$9.00
 Iwan's Imp'd Post Hole Auger.....40¢5¢
 Iwan's Vaughan Pattern Post Hole
 Augers.....\$4 doz. \$6.25
 Iwan's Perfection Post Hole Digger.....\$8.25
 Iwan's Split Handle Post Hole Dig-
 gers.....\$4 doz. \$7.25
 Kohler's Universal.....\$4 doz. \$14.00
 Kohler's Little Giant.....\$4 doz. \$12.00
 Kohler's Hercules.....\$4 doz. \$10.00
 Kohler's Invincible.....\$4 doz. \$9.00
 Kohler's Rival.....\$4 doz. \$8.00
 Kohler's Pioneer.....\$4 doz. \$7.00
 Never-Break Post Hole Diggers, \$4
 doz., \$24.00.....60¢
 Samson, \$4 doz. \$34.00.....25¢

Dividers—See Compasses.

Doors, Screen—

Phillips', style E, 3/4 in.....\$4 doz. \$10.00
 Phillips', style 077, 3/4 in.....\$4 doz. \$7.50
 Phillips', style x-y, 3/4 in.....\$4 doz. \$10.50

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, \$4
 doz., \$18; No. 2, \$15; No. 3, \$12;
 No. 4, \$18.

Drawing Knives—

See Knives, Drawing.

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers.....35¢
 Diamond Wheel Dresser Cutters.....35¢

Drills and Drill Stocks—

Common Blacksmiths' Drill,
 each.....\$1.50@1.75
 Breast, Millers Falls.....15¢10¢
 Breast, P. S. & W.....40¢
 Goodell Automatic Drills.....40¢
 Johnson's Automatic Drills, Nos. 3
 and 3.....16¢
 Johnson's Drill Points.....16¢
 Millers Falls Automatic Drills.....33¢4¢10¢
 Ratchet, Curtis & Curtis.....25¢
 Ratchet, Parker.....40¢
 Ratchet, Weston's.....40¢
 Ratchet, Weston's, Style H Im-
 proved.....40¢
 Ratchet, No. 012.....40¢
 Ratchet, Whitneys, P. S. & W. 50¢
 Whitney's Hand Drill, No. 1, \$10.00
 Adjustable, No. 10, \$12.00.....35¢

Twist Drills—

Bit Stock.....60¢10¢10¢70¢
 Taper and Straight Shank.....60¢10¢60¢10¢45¢

Drivers, Screw—

Screw Driver Bits, per doz. 45¢50¢
 Balsey's Screw Holder and Driver, \$4
 doz., 2 1/2-in., \$6; 1-in., \$7.50; 6-in.,
 \$9.....50¢
 Buck Bros' Screw Driver Bits.....50¢
 Champion.....50¢
 Edson.....50¢
 Fray's Hol' H'dle Sets, No. 3, \$12.50
 Gay's Double Action Ratchet.....35¢
 Goodell's Auto. 50¢10¢10¢50¢10¢45¢
 Hurwood

1/4 Keys.....1b. 5 1/2¢ 6¢ 4¢
 10-lb. cans.....6 1/2¢ 7¢ 8¢
 10-lb. cans, less
 than 10.....10¢ 10¢ 8¢
 Less quantity .10¢ 10¢ 8¢
 NOTE.—In lots 1 to 3 tons a discount
 of 10% is given.

Extractors, Lemon Juice

—See Squeezers, Lemon.

Fasteners, Blind—

Zimmerman's.....50¢10%
 Walling's.....40¢10%

Cord and Weight—

Ives.....40%

Faucets—

Cork Lined.....50¢50¢10%
 Metallic Key, Leather Lined.....

Red Cedar.....40¢10¢50%
 Petroleum.....70¢10¢75%

B. & L. B. Co.:
 Metal Key.....60¢10%
 Star.....50¢10%
 West Lock.....50¢10%

John Sommer's Peerless Tin Key.....40%
 John Sommer's Boss Tin Key.....50%
 John Sommer's Victor Mtl. Key.....50%
 John Sommer's Duplex Metal Key.....40%
 John Sommer's Diamond Lock.....40%
 John Sommer's I. L. L. Cork Lined.....50%
 John Sommer's Reliable Cork Lined.....50%
 John Sommer's Chicago Cork Lined.....50%
 John Sommer's O. K. Cork Lined.....50%
 John Sommer's No Brand, Cedar.....40%
 John Sommer's Perfection, Cedar.....40%

McKenna, Brass:
 Burglar Proof, N. P.....25%
 Improved, 1/2 and 3/4 inch.....25%

Self Measuring:
 Enterprise, 1/2 doz. \$36.00.....40¢10%
 Lane's, 1/2 doz. \$36.00.....40¢10%
 National Measuring, 1/2 doz. \$36.00.....40¢10%

Felloe Plates—

—See Plates, Felloe.

Files— Domestic—

List revised Nov. 1, 1899.

Best Brands.....70¢10¢75¢5%

Standard Brands.....75¢10¢75¢10¢10%

Lower Grade.....75¢10¢10¢80¢10%

Imported—

Stubs' Tapers, Stubs' Hst. July

2 1/2, '97.....33 1-3¢40%

Fixtures, Fire Door—

Richards Mfg. Co.:
 Universal, No. 103.....\$3.75
 Special, No. 104.....\$3.75
 Fusible Links, No. 96.....30%
 Expansion Bolts, No. 107.....60¢10%

Grindstone—

Net Prices: 15 17 19 21

Per doz. \$3.25 3.75 4.25 4.75

P. S. & W. Co.....30¢10¢40%

Reading Hardware Co.....70%

Stowell's Giant Grindstone Hanger.....40%
 Stowell's Grindstone Fixture.....50¢10¢10%
 Stowell's Grindstone Fixture, Light.....60¢10%

Fodder Squeezers—

—See Compressors.

Forks—

NOTE.—Manufacturers are

selling from the list of September 1, 1904, but many jobbers are still

using list of August 1, 1899, or

selling at net prices.

Iowa Dig-Key Potato.....60¢10%

Victor, Hay.....60¢15¢25%

Victor, Manure.....60¢20%

Victor, Header.....60%

Champion, Hay.....60%

Champion, Header.....60%

Champion, Manure.....60¢15¢25%

Columbia, Hay.....60¢20%

Columbia, Manure.....70%

Columbia, Spading.....70¢12%

Hawkeye Wood Barley.....40%

W. & C. Potato Digger.....60¢10%

Acme Hay.....60¢10¢5%

Acme Manure, 4 line.....60¢10¢5%

Dakota Header.....60¢20%

Jackson Steel Barley.....60¢20%

Kansas Header.....60%

W. & C. Favorite Wood Barley.....40%

Plated.—See Spoons.

Frames— Saw—

White, 8'g't Bar, per doz. 75¢80¢

Red, 8'g't Bar, per doz. \$1.00(\$1.25)

Red, Dbl. Brace, per doz. \$1.40(\$1.50)

Freezers, Ice Cream—

Qt.1 2 3 4 5

Each.....\$1.30 \$1.60 \$1.90 \$2.20 \$2.50

Fruit and Jelly Presses—

—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Fuse— Per 1000 Feet.

Hemp.....\$2.75

Cotton.....3.20

Waterproof Sgl. Taped.....3.65

Waterproof Dbl. Taped.....4.40

Waterproof Tpl. Taped.....5.15

Gates, Molasses and Oil—

Stebbins' Pattern.....80¢10%

Gauges—

Marking, Mortise, &c. 50¢10¢60%

Chapin-Stephens Co.:
 Marking, Mortise, &c. 50¢10¢60%
 School's Patent.....50¢10¢50%
 Door Hangers.....50¢50%
 Stanley R. & L. Co.'s Butt and
 Rabbit Gauge.....50%

Marking and Mortise.....50%

Wire, Brown & Sharpe's.....25%

Wire, Morse's.....25%

Wire, P. S. & W. Co.....35%

Gimlets— Single Cut—

Numbered assort-

ments, per gro.

Nail, Metal, No. 1, \$2.00; 2, \$2.30

Spike, Metal, No. 1, \$1.00; 2, \$1.30

Nail, Wood Handled, No. 1,

\$2.30; 2, \$2.60

Spike, Wood Handled, No. 1,

\$1.50; 2, \$1.60

Glass, American Window

See Trade Report.

Glasses, Level—

Chapin-Stephens Co.....60¢60¢10¢10%

Glue, Liquid Fish—

Bottles or Cans, with Brush.....

25¢10¢50%

International Glue Co. (Martin's).....40%

Grease, Axle—

Common Grade.....gro. \$4.50¢6.00

Dixon's Everlasting, 10-lb. pails, ea. 85¢

Dixon's Everlasting in boxes, 96.00

1 lb. \$1.20; 2 lb. \$2.00

Helmet Hard Oil.....25%

Griddles, Soapstone—

Pike Mfg. Co.....33¢63¢10%

Grindstones—

Bicycle Emery Grinder.....\$6.50

Bicycle Grindstones, each.....\$2.50¢3.00

Pike Mfg. Co.:
 Improved Family Grindstones,

per inch, 1/2 doz.....\$2.00

Pike Mower and Tool Grinder,

each.....\$6.00

Velox Ball Bearing, Mounted, Angle

Iron Frames, each.....\$3.00

Grips, Nipple—

Perfect Nipple Grips.....40¢10¢2%

Halters and Ties—

Cow Ties.....60¢10¢60¢10¢5%

Covert Mfg. Co.:
 Web.....45%

Jute Rope.....45%

Sisal Rope.....35%

Cotton Rope.....45%

Hemp Rope.....45%

Covert's Saddlery Works:
 Web and Leather Halters.....70%

Jute and Manila Rope Halters.....70%

Sisal Rope Halters.....70%

Jute, Manila and Cotton Rope

Ties.....70%

Sisal Rope Ties.....60¢10%

Oneida Community:
 Am. Coil and Halters.....40¢40¢5%

Am. Cow Ties.....45¢50%

Niagara Coil and Halters.....45¢50%

Niagara Cow Ties.....45¢50%10¢5%

E. T. Rugg & Co.:
 Leather Halters.....50%

Web Halters and Webbing.....60%

Jute and Sisal Rope Halters.....60%

Jute and Sisal Horse and Cattle

Ties.....60%

Cotton Horse Ties.....60%

Livery Tie, Braided.....60%

Hammers—

Handled Hammers—

Heller's Machinists.....40¢10¢40¢10%

Heller's Farriers.....40¢10¢40¢10%

Magnetic Tack, Nos. 1, 2, 3, \$1.25

\$1.50, \$1.75

Peck, Stow & Wilcox, Steel.....50%

Fayette R. Plumb:
 Plumb, A E Nail.....33¢67¢63¢34¢10¢15%

Engineers' and I. S. Hand.....50¢75¢50¢10¢75¢45%

Machinists' Hammers.....50¢50¢50¢10¢5%

Riveting and Tinners.....40¢25¢40¢10¢25%

Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—

Under 3 lb., per lb., 50¢.....80¢10%

3 to 5 lb., per lb., 50¢.....80¢10%

Over 5 lb., per lb., 50¢.....80¢10¢10%

Wilkinson's Smith's.....1b. 9¢40%

Handles—

Agricultural Tool Handles

Aze, Pick, &c.....60¢10¢60¢10¢5%

Hoe, Rake, &c.....45¢50%

Fork, Shovel, Spade, &c.:
 Long Handles.....45¢50%

D Handles.....50¢50¢5%

Cross-Cut Saw Handles—

Atkins.....40%

Champion.....45¢15¢10%

Dixson.....50%

Mechanics' Tool Handles—

Auger, assorted.....gro. \$2.50¢\$3.00

Brad Acl.gro. \$1.65¢\$1.75

Chisel Handles:

Apple Tanged Firmer, gro.

assorted.....\$2.40¢\$2.65

Hickory Tanged Firmer, gro.

assorted.....\$2.15¢\$2.40

Apple Socket Firmer, gro.

assorted.....\$1.75¢\$1.95

Hickory Socket Firmer, gro.

assorted.....\$1.45¢\$1.60

Hickory Socket Framing, gro.

assorted.....\$1.60¢\$1.75

File, assorted.....gro. \$1.30¢\$1.40

Hammer, Hatchet, &c.

60¢10¢60¢10¢5%

Hand Saw, Varnished, doz.

80¢85¢; Not Varnished.....65¢75¢

Plane Handles:
 Jack, doz. 30¢; Jack, Bolted, 75¢

Fore, doz. 45¢; Fore, Bolted, 90¢

Chapin-Stephens Co.:
 Carving Tool.....40¢40¢10%

Chisel.....55¢55¢10%

File and Awl.....65¢65¢10%

Saw and Plane.....40¢40¢10%

Screw Driver.....40¢40¢10%

Millers Falls Adj. and Ratchet Auger

Handles.....15¢10%

Nicholson Simplicity Pile Handle.....

per gro. \$0.85¢\$1.50

Hangers—

NOTE.—Barn Door Hangers are generally

quoted per pair, without track,

and Parlor Door Hangers per double set

with track, &c.

Atkins Mfg. Co.:
 Reliable, No. 1.....per doz. \$2.00

Reliable, No. 2.....per doz. \$2.00

Chicago Spring Butt Co.:
 Friction.....25%

Oscillating.....25%

Big Twist.....25%

Chisholm & Moore Mfg. Co.:
 Baggage Car Door.....50%

Elevator.....30%

Railroad.....50%

Croft & Carrier Mfg. Co.:
 Loose Axle.....60¢10%

Roller Bearing.....70%

Griffin Mfg. Co.:
 Solid Axle, No. 10, \$12.00.....70%

Roller Bearing, No. 11, \$15.00, 70%

Roller Bearing, Ex. Hy., No. 12,

\$18.00.....70%

Hinged Hangers, \$16.00.....60¢10%

Lane Bros. Co.:
 Parlor, Ball Bearing.....\$4.00

Parlor, Standard.....\$3.15

Parlor, No. 105.....\$2.85

Parlor, New Model.....\$2.80

Parlor, New Champion.....\$2.25

Barn Door, Standard.....60¢5%

Hinged.....net \$6.40

Covered.....60¢2%

Special.....70¢5%

Lawrence Bros.:
 Cleveland.....60¢10%

Clippers, No. 75.....60%

Crown.....60¢10%

Easy Parlor Door, Dbl. Sets,

\$1.25.....60¢5%

Giant.....70¢5%

Hummer.....70¢5%

New York.....60¢10%

Peerless.....75%

Sterling.....60¢10%

Eureka Improved.....	each \$20.00
Family Bay State.....	doz. \$15.00
Improved Bay State.....	doz. \$36.00
Little Star.....	doz. \$5.00
New Lightning.....	doz. \$7.00
Reading 72.....	doz. \$3.25
Reading 78.....	doz. \$6.25
Rocking Table.....	doz. \$6.20
Turn Table.....	doz. \$6.00
White Mountain.....	doz. \$5.00

Potato—

Saratoga.....	doz. \$7.00
White Mountain.....	doz. \$6.00

Picks and Mattocks—

List Feb. 23, 1899.....	75%
Cronk's Handled Garden Mattock.....	33 1/2%
doz., \$6.40.....	

Pinking Irons—

See Irons, Pinking.

Pins, Escutcheon—

Brass.....	60¢@60¢@10%
Iron, list Nov. 11, '85.....	60¢@60¢@10%

Pipe, Cast Iron Soil—

Standard, 2-6 in.....	60%
Extra Heavy, 2-5 in.....	70%
Fittings.....	75%

Pipe, Merchant—

Consumers, Carloads.....	
Steel.....	
Iron.....	

1/4 & 1/2 in.....	71%	55%	68 1/2%	52 1/2%
3/4 in.....	73%	59%	72 1/2%	60 1/2%
1 in.....	75%	63%	74 1/2%	60 1/2%
1 1/4 in.....	77%	69%	77%	67%
2 in.....	79%	72%	77%	67%
3 in.....	81%	75%	79%	69%

Pipe, Wrought Sewer—

Standard Pipe and Fittings, 2 to 24 in.....	68%
New England.....	71%
New York and New Jersey.....	71%
Maryland, Delaware, E. Pa.....	71%
West. Pa. and West Va.....	71%
Virginia.....	71%
Ohio, Michigan and Ky.....	71%
Indiana.....	71%

NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe.....	L. C. L.
5 in., per 100 joints.....	\$8.00
6 in., per 100 joints.....	8.50
7 in., per 100 joints.....	9.50

Planes and Plane Irons—

Wood Planes—	
Bench, first qual.....	40¢@10%
Bench, second qual.....	50¢@10%
Molding.....	33 1/2¢@10%
Chapin-Stephens Co.:.....	
Bench, First Quality.....	40¢@40¢@10%
Bench, Second Quality.....	50¢@50¢@10%
Molding.....	33 1/2¢@33 1/2¢@10%
Toy and German.....	40¢@40¢@10%
Chapin's.....	60%
Ohio Tool Co.:.....	
Bench, First Quality.....	40¢@40¢@10%
Bench, Second Quality.....	50¢@50¢@10%
Molding.....	33 1/2¢@33 1/2¢@10%
Adjustable Wood Bottom.....	60%
Union.....	60%

Bailey's (Stanley R. & L. Co.).....	40%
Miscellaneous Planes (Stanley R. & L. Co.).....	35%
Ohio Tool Co.'s Iron Planes.....	60%
Sargent's.....	60¢@10%
Union.....	60%

Plane Irons—

Wood Bench Plane Irons.....	25¢@10¢@30%
Buck Bros.....	30%
Chapin-Stephens Co.....	30¢@30¢@10%
Ohio Tool Co.....	30%
Stanley R. & L. Co.....	35%
Union.....	50%
L. & I. White.....	20¢@25¢@25%

Planters, Corn, Hand—

Kohler's Eclipse.....	doz. \$8.50
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Plates—

Felloc.....	doz. \$1.30
Self-Sealing Pie Plates (R. M. W. Co.).....	doz. \$2.00

Pliers and Nippers—

Button Pliers.....	75¢@10¢@75, 10, 5%
Gas Burner, per doz., 5 in.....	\$1.25
@ \$1.30; 6 in., \$1.45 @ \$1.50.....	
Gas Pipe.....	7 8 10 12 in.
Acme Nippers.....	\$2.00 \$2.25 \$3.00 \$3.75

Cronk & Carrier Mfg. Co.:.....	
American Button.....	75¢@10%
Cronk's.....	60%
Stub's Pattern.....	33 1/2%
Combination and others.....	33 1/2%
Heller's Farriers' Nippers, Pincers and Tools.....	40¢@10¢@40¢@10¢@10%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....	50%
P. S. & W. Tinnern's Cutting Nippers.....	40%
Wm. Schollhorn Co.:.....	
Bernard.....	33 1/2%
Elm City.....	33 1/2%
Lodi.....	50%
Paragon.....	50%
Swedish Slide, End and Diagonal Cutting Pliers.....	50%
Union Dron Nippers and Tool Co.:.....	40%

Plumb and Levels—

Chapin-Stephens Co.:.....	30¢@30¢@10¢@10%
Chapin's Imp. Brass Cor. (40¢@10¢@10%).....	
Pocket Levels.....	30¢@30¢@10¢@10%
Diston's Plumb and Levels.....	70%
Diston's Pocket Levels.....	10%
C. E. Jennings & Co.'s Iron, Adjustable.....	40¢@75%
Stanley R. & L. Co.....	45%
Stanley's Duplex.....	35%
Woods' Extension.....	33 1/2%

Poachers, Egg—

Buffalo Steam Egg Poachers, No. 3.....	No. 1, \$6.00; No. 2, \$9.00; No. 3, \$9.00; No. 4, \$12.00.....
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Points, Glaziers'—

Bulk and 1-lb. papers, 1/2 lb. @ 9¢.....	
1/4-lb. papers.....	1/2 lb. @ 9¢
1/2-lb. papers.....	1 lb. @ 10 1/2¢

Pokes, Animal—

Ft. Madison Hawkeye.....	doz. \$3.25
Ft. Madison Western.....	doz. \$4.00

Police Goods—

Manufacturers' Lists.....	25¢@25¢@5%
Tower's.....	25%

Polish—Metal, Etc—

Glasbrite, No. 2, 5 lb can (powder), each, \$1.25; 1/2 doz., \$12.00; No. 2, 10 lb can (cake), each, \$2.50; 1/2 doz., \$24.00.....	
Prestoline Liquid, No. 1 (1/4 pt.), 1/2 doz., \$3.00; No. 2 (1 qt.), 1/2 doz., \$24.00.....	
Prestoline Paste.....	40%

George William Hoffman:.....	
U. S. Metal Polish Paste, 3 oz. boxes, 1/2 doz. 50¢; 1/2 doz. \$4.50; 1/2 lb boxes, 1/2 doz. \$1.25; 1 lb boxes, 1/2 doz. \$2.25.....	
U. S. Liquid, 8 oz. cans, 1/2 doz., \$1.25; 1/2 doz., \$12.00.....	
Barkeepers' Friend Metal Polish, 1/2 doz., \$1.75; 1/2 doz., \$18.00.....	
Wynn's White Silk, 1/2 pt. cans, 1/2 doz., \$2.00.....	

Stove—

Black Eagle Benzine Paste, 5 lb cans, 1/2 doz., \$10¢.....	
Black Eagle, Liquid, 1/2 pt. cans, 1/2 doz., 75¢.....	
Black Jack Paste, 1/2 lb cans, 1/2 doz., \$9.00.....	
Black Kid Paste, 5 lb cans, each, \$0.65.....	
Ladd's Black Beauty Liquid, per 100 tins.....	\$4.75

Joseph Dixon's, 1/2 gr. \$5.75.....	
Dixon's Plumbago.....	10¢
Fireside.....	1/2 gr. \$2.50
Gem, 1/2 gr. \$1.50.....	10%
Japanese.....	1/2 gr. \$3.50
Jet Black.....	1/2 gr. \$3.50
Peerless Iron Enamel, 10 oz. cans, 1/2 doz., \$1.50.....	

Wynn's:.....	
Black Silk, 5 lb pail.....	each 70¢
Black Silk, 1/2 lb box.....	doz. \$1.00
Black Silk, 5 oz. box.....	doz. \$0.75
Black Silk, 1/2 pt. liq.....	doz. \$1.00

Poppers, Corn—

1 qt., Square.....	gro. \$9.00
1 qt., Round.....	gro. \$10.00
1 1/2 qt., Square.....	gro. \$11.00
2 qt., Square.....	gro. \$13.00

Post Hole and Tree Augers and Diggers—

See also Diggers, Post Hole, &c.	
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Posts, Steel—

Steel Fence Post, each, 5 ft., 42¢; 6 ft., 46¢; 7 1/2 ft., 48¢.....	
Steel Hitching Posts.....	each \$1.30

Potato Parers—

See Parers, Potato.....	
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Pots, Glue—

Enameled.....	40%
Tinned.....	35%

Powder—

In Canisters:.....	
Duck, 1 lb.....	each 45¢
Fine Sporting, 1 lb.....	each 75¢
Rifle, 1/2 lb.....	each 15¢
Rifle, 1 lb.....	each 25¢

In Kegs:.....	
12 1/2-lb. kegs.....	\$3.50
25-lb. kegs.....	\$4.50

King's Semi-Smokeless:.....	
Keg (25 lb bulk).....	\$6.50
Half Keg (12 1/2 lb bulk).....	\$3.50
Quarter Keg (6 1/4 lb bulk).....	\$1.90
Case 24 (1 lb cans bulk).....	\$3.50
Half case (1 lb cans bulk).....	\$4.50

King's Smokeless:.....	
Keg (25 lb bulk).....	\$12.00 \$15.00
Half Keg (12 1/2 lb bulk).....	6.25 7.75
Quarter Keg (6 1/4 lb bulk).....	3.25 4.00
Case 24 (1 lb cans bulk).....	14.00 17.00
Half case 12 (1 lb c. bks).....	7.25 8.75
Robin Hood Smokeless Shot Gun.....	50¢@20%

Presses—

Enterprise Mfg. Co.....	20¢@25%
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Seal Presses—

Morrill's No. 1, 1/2 doz., \$20.00.....	50%
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Pruning Hooks and Shears

See Shears.....	
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Pullers, Cork—

Invincible Cork Puller.....	\$21.00
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Pullers, Nail—

Cyclops.....	50%
Miller's Falls, No. 3, 1/2 doz., \$12.00.....	33 1/2¢@10%
Morrill's No. 1, Nail Puller, 1/2 doz., \$20.00.....	50%
Pearson No. 1, Cyclone Spike Puller, each \$30.00.....	50%
Scranton, Case Lots:.....	
No. 2B (large).....	\$5.50
No. 3B (small).....	\$5.00
Smith & Hemenway Co.:.....	
Diamond B. No. 2, case lots.....	doz. \$6.00
Diamond B. No. 3, case lots.....	doz. \$5.50
Giant No. 1, 1/2 doz. \$18; No. 2, 1/2 doz. \$16.50; No. 3, 1/2 doz. \$15.....	33 1/2%
Staple Pullers.....	60%
Parrot Tack and Stub Puller, 1/2 doz., 75¢; 1/2 doz., \$4.00.....	

Pulleys, Single Wheel—

Awning or Tackle.....	1/4 1/2 3
doz., \$0.30 .35 .50 1.05.....	
Hay Fork, Swivel or Solid Eye.....	doz., 1/4 in., \$1.25; 5 in., \$1.55
Inch.....	2 1/4 1/2 1
Hot House, doz.....	\$0.65 \$3 1.20
Inch.....	1/4 1/2 1 3/4
Screw, doz.....	\$0.16 .19 .23 .30
Inch.....	1/4 1/2 1 3/4
Slide, doz.....	\$0.25 .40 .55 .60
Inch.....	1/4 1/2 1 3/4

Stowell's:.....	
Ceiling or End, Anti-Friction.....	60¢@10%
Dumb Waiter, Anti-Friction.....	60¢@10%
Electric Light.....	60%
Side, Anti-Friction.....	60¢@10%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1 1/4 and 2 in.....	16¢@19¢
Auger Mortise, no Face Plate.....	doz., 1 1/4 and 2 in., 16¢@19¢
Acme.....	1 1/4 in., 16¢; 2 in., 19¢
For All-Steel, Nos. 3 and 4, 2 in.....	doz. 50%
Grand Rapids All Steel Noiseless.....	50%
Ideal.....	70¢@10%
Niagara.....	1 1/4 in., 16¢; 2 in., 19¢
No. 26, Troy.....	1 1/4 in., 14¢; 2 in., 16¢
Star.....	1 1/4 in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.....	

Pumps—

Cistern.....	60¢@60¢@10%
Pitcher Spout.....	60¢@80¢@10%
Wood Pumps, Tubing, &c.....	45¢@50%
Barnes Dbl. Acting (low list).....	50%
Barnes' Pitcher Spout.....	75¢@10¢@5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....	\$16.00
Dalay Spray Pump.....	doz. \$6.75
Flint & Walling's, Fast Mail Hand (low list).....	55%
Flint & Walling's Fast Mail (low list).....	55%
Flint & Walling's Tight Top Pitcher.....	55¢@5%
National Specialty Mfg. Co., Measuring.....	\$6.00
Mechanical Sprayer.....	\$6.00
Myers' Pumps (low list).....	50%
Myers' Power Pumps.....	50%
Myers' Spray Pumps.....	50¢@10%

Pump Leathers—

Plunger and Lower Valve—Per gro.:.....	
Inch.....	2 2 1/4 2 1/2 2 3/4
doz.....	\$2.20 2.50 2.75 3.00
Inch.....	3 3 1/4 3 1/2 3 3/4
doz.....	\$3.30 3.60 3.85 4.10 4.40
Plunger Cup Leathers—Per 100:.....	
Inch.....	2 1/2 3 3 1/4 4
doz.....	\$2.75 3.85 5.00 6.00

Punches—

Saddlers' or Drive, good.....	doz. 50¢@75¢
Spring, single tube, good quality.....	\$1.75@2.00
Revolving (1/4 tubes).....	doz. \$3.50@3.75
Bemis & Call Co.'s Cast St'l Drive.....	50%
Bemis & Call Co.'s Check.....	55%
Morrill's Nos. 1AA, 1A, 1B, 1C.....	\$15.00
Hercules.....	each \$5.00
Niagara Hollow Punches.....	40%
Niagara Solid Punches.....	55¢@10%
Wm. Schollhorn Co.:.....	
Bernard.....	33 1/2%
Lodi.....	50%
Paragon.....	50%
Steel Screw, B. & K. Mfg. Co.....	50%
Tinnern's Hollow, P. S. & W. Co.....	40%
Tinnern's Solid, P. S. & W. Co., 1/2 doz., \$1.44.....	60%

Sliding Door, Painted Iron.....	2 1/4@2 1/2¢
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Sliding Door, Wrought Brass.....	1 1/2 in., 1/2, 36¢.....
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Allith Mfg. Co.:.....	
No. 1, Reliable Hgr. Track, 1/2 ft. 5 1/2¢.....	
No. 2, Reliable Hgr. Track, 1/2 ft. 7¢.....	
Double Braced Steel Rail.....	1/2 ft. 2 1/2¢
O. N. T. Rail.....	2 1/2¢

Griffin's:.....	
xxx, 100 ft., 1 x 3-16 in., \$3.00.....	
1 1/4 x 3-16 in., 3.50.....	
Hinged Hanger, 100 ft., 1 x 3-16 in., \$3.10; 1 1/4 x 3-16 in., \$3.60.....	

Lane's.....	
Hinged Track, 100 ft., 1 in., \$3.40; 1 1/4 in., \$4.10.....	
O. N. T., 100 ft., 1 in., \$2.75; 1 1/4 in., \$3.50; 1 1/2 in., \$4.00.....	
Lawrence Bros., 1 3-16 in., 100 ft. \$4.00.....	
New York, 1 x 3-16 in., No. 202, \$4.00.....	
New York, 1 x 3-16 in., 100 ft. \$2.75.....	

McKinney's:.....	
Hinged Hanger Rail, 1/2 ft., 11¢.....	50%
None Better.....	1/2 ft. 3 1/2¢
Standard.....	1/2 ft. 4¢
Myers' Stayon Track.....	60¢@10%

Richards' Mfg. Co.:.....	
Common 1 x 3-6 in., \$2.25; 1 1/4 x 3-16, \$2.50; 1 1/2 x 3-16, \$2.75.....	
Special Hinged Hanger Rail.....	60¢@10%
Lag Screw Rail, No. 6.....	50%
Gauge Trolley Track, 1/2 ft., No. 31.....	14¢
No. 32, 1 1/2 ft., No. 33.....	20¢

Standard, 1 1/2 in.....	30 100 ft. \$4.00
Lawrence Bros.:	
30 100 ft. No. 201, \$4.00; No. 202, \$4.00	
New York, 1 x 3-16 in. 30 100 ft.	\$2.75

Rules—

Boxwood	60¢10¢10¢
Ivory	35¢10¢35¢10¢45¢
Chapin-Stephens Co.	
Boxwood	60¢10¢10¢
Flexfold	27¢10¢10¢24¢
Ivory	35¢10¢10¢10¢
Miscellaneous	50¢50¢10¢10¢
Combination	55¢55¢10¢
Stationers	100¢10¢10¢
Keuffel & Esser Co.	
Folding, Wood	35¢10¢
Folding, Steel	35¢10¢
Lufkin's Steel	50¢10¢
Lufkin's Lumber	60¢
Stanley R. & L. Co.	
Boxwood	60¢10¢
Ivory	45¢
Miscellaneous	60¢
Zig Zag	40¢
Zig Zag, Pin Joint	42¢
Upton Nut Co.	60¢60¢10¢
Boxwood	35¢10¢35¢10¢10¢
Ivory	35¢10¢35¢10¢10¢

Sash Balances—

See Balance, Sash.

Sash Locks—

See Locks, Sash.

Sash Weights—

See Weights, Sash.

Sausage Stuffers or Fillers

See Stuffers or Fillers, Sausage.

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Saws—**

ALKINS:	
Circular	50¢
Hand	50¢10¢60¢
Cross Cuts	35¢5¢
Mulay, Mill and Drag	50¢
One-Man Saw	40¢
Wood Saws	40¢
Hand, Compass, &c.	40¢
Chapin-Stephens Co.	
Turning Saws and Frames	30¢30¢10¢
Diamond Saw & Stamping Works	
Sterling Kitchen Saws	30¢10¢10¢
Diston's:	
Circular, Solid and Ins'ted Tooth	50¢
Band, 2 to 14 in. wide	50¢
Band, 4 to 14 in.	50¢
Crosscuts	50¢
Narrow Crosscuts	50¢
Mulay, Mill and Drag	50¢
Framed Woodsaws	35¢
Woodsaw Blades	35¢
Woodsaw Rods	35¢
Hand Saws, No. 15, 9, 8, 16, 4100	25¢
120, 120, 7, 8, 4	25¢
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1, 0, 00, Combination	30¢
Compass, Key Hole, &c.	25¢
Butcher Saws and Blades	30¢
C. E. Jennings & Co.'s:	
Back Saws	25¢
Butcher Saws	30¢
Compass and Key Hole Saws	35¢5¢
Framed Wood Saws	30¢
Hand Saws	20¢24¢
Wood Saw Blades	35¢
Millers Falls:	
Butcher Saws	15¢10¢
Star Saw Blades	15¢10¢
Peace & Richardson's Hand Saws	30¢
Simonds:	
Circular Saws	50¢
Crescent Ground Cross Cut Saws	50¢
One-Man Cross Cuts	40¢10¢
Gang Mill, Mulay and Drag Saws	50¢
Hand Saws	50¢
Back Saws	25¢25¢1/2
Butcher Saws	35¢35¢1/2
Hand Saws	25¢25¢1/2
Hand Saws, Bay State Brand	45¢
Compass, Key Hole, &c.	25¢25¢1/2
Wood Saws	35¢35¢1/2
Springfield Mach. Screw Co.	
Diamond Kitchen Saws	10¢10¢50¢
Butcher Saws Blades	35¢40¢
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws	50¢
Hack Saws—	
Athens' Hack Saw Blades A A A	35¢
Diston's:	
Concave Blades	25¢
Keystone	40¢
Hack Saw Frames	15¢10¢
Fitchburg File Works, The Best	35¢
C. E. Jennings & Co.'s	
Hack Saw Frames, Nos. 175, 180	40¢7 1/2¢
Hack Saws, Nos. 175, 180, complete	40¢7 1/2¢
Goodell's Hack Saw Blades	40¢7 1/2¢
Griffin's Hack Saw Frames	35¢5¢10¢
Griffin's Hack Saw Blades	35¢5¢10¢
Springfield Mach. Screw Co.	
Diamond Hack Saw Blades	35¢
Diamond Hack Saw Frames	50¢
Star Hack Saws and Blades	15¢10¢
Sterling Hack Saw Blades	30¢10¢45¢
Sterling Hack Saw Frames	30¢10¢10¢
Sterling Power Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00	10¢
Victor Hack Saw Blades	25¢
Victor Hack Saw Frames	40¢
Scroll—	
Barnes' No. 1, \$15	25¢
Barnes' Scroll Saw Blades	40¢
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18; with boring attachment, \$20	20¢
Lester, complete, \$10.00	15¢10¢
Rogers, complete, \$4.00	15¢10¢
Scalers, Fish—	
Covert's Saddlery Works	60¢10¢
Scales—	
Family, Turnbull's	50¢50¢10¢
Counter:	
Hatch, Platform, 1/2 oz. to 5 lbs.	\$5.50
Two Platforms, 1/2 oz. to 5 lbs.	\$10.00
Union Platform, Plain \$1.70 to \$1.90	
Union Platform, Stpd. \$1.85 to \$2.15	
Chattillon's:	
Eureka	25¢
Favorite	40¢
Crocers' Trip Scales	50¢
Chicago Scale Co.	
The "Little Detective"	25 lbs 50¢
Union or Family No. 2	60¢

Portable Platform (reduced list) 50¢
Wagon or Stock (reduced list) 25¢35¢
"The Standard" Portable 50¢
"The Standard" B. K. and Wagon 50¢

Scrapers—

Box, 1 Handle	doz. \$2.00 to \$2.25
Box, 2 Handle	doz. \$2.60 to \$2.85
Ship	Light, \$2.00; Heavy, \$4.50
Adjustable Box Scraper (S. K. & L. Co.)	\$6.00
Chapin-Stephens Co., Box	30¢30¢10¢10¢

Screens, Window and Frames—

Air Line Pattern Screens	60¢10¢
Flyer Pattern Screens	60¢10¢10¢45¢
Maine Screen Frames	40¢10¢45¢
Perfection Screens	60¢10¢60¢10¢45¢
Phillips' Screen Frames	60¢50¢60¢10¢

See also Doors.

Screws—Bench and Hand

Bench, Iron, doz., 1 in.	\$2.50 to \$2.75
2 1/2; 1 1/2, \$3.00 to \$3.25; 1 1/4, \$3.50 to \$3.75	
Bench, W'd, Beech, doz.	30¢30¢5¢
Hand, Wood	30¢30¢5¢
R. Bliss Mfg. Co., Hand	30¢30¢10¢
Chapin-Stephens Co., Hand	30¢30¢10¢
Ohio Tool Co., Bench and Hand	30¢
Coach, Lag and Hand Rail—	
Lag, Cone Point, list Oct. 1, '99	75¢15¢
Coach, Gimlet Point, list Oct. 1, '99	75¢10¢
Hand Rail, list Jan. 1, '81	70¢10¢75¢

Jack Screws—

Standard List	80¢80¢45¢
Millers Falls	50¢10¢10¢
Millers Falls, Roller	50¢10¢
P. S. & W.	50¢
Sargent	70¢10¢
Swett Iron Works	75¢10¢80¢45¢

Machine—

List Jan. 1, '98:

Flat or Round Head, Iron

Flat or Round Head, Brass

Set and Cap—

Set (Iron)

Set (Steel), net advance over

Iron

Sq. Hd. Cap

Hex. Hd. Cap

Rd. Hd. Cap

Fillister Hd. Cap

Wood—

List July 23, 1903.

Flat Head, Iron

Round Head, Iron

Flat Head, Brass

Round Head, Brass

Flat Head, Bronze

Round Head, Bronze

Drive Screws

Scroll Saws—

See Saws, Scroll.

Scythes—

Grass, No. 1, Plain Finish

Clipper, Bronzed Webb

No. 3 Clipper, Po'd Webb

No. 6 Clipper & Solid Steel

Bush, Weed & Bramble, No. 2

Grain, No. 1

Bronzed Webb, No. 1

Nos. 3 & 4 Clipper, Grain

Solid Steel No. 6

Seeders, Raisin—

Enterprise

Sets—Awl and Tool—

Aiken's Sets, Awl and Tools

No. 20, \$10.00

Fray's Adj. Tool Handles, No. 1, \$12;

2, \$15; 3, \$12; 4, \$9; 5, \$7

C. E. Jennings & Co.'s Model Tool

Holders

Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18; 15¢10¢

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake

and Shovel

Octagon

Huck Bros

Cannon's Diamond Point

Mayhew's

Snell's Corrugated, Cup Pt.

Snell's Knurled, Cup Pt.

Springfield Mach. Screw Co.

Diamond Knurled Cup Pt.

Regular list

Saw—

Aiken's

Genuine

Imitation

Atkin's

Criterion

Adjustable

Bemis & Call Co.'s

Plate

Diston's Star and Monarch

Morrell's No. 1, \$15.00

Nos. 3 and 4, Cross Cut, \$20.00

No. 5, Mill, \$30.00

No. 10, 12, 15, \$15.00

No. 1 Old Style, \$10.00

Special, \$16.25

Giant Royal Cross Cut

Royal, Hand

Taintor Positive

Skate—

Smith & Hemenway Co.

Shaves, Spoke—

Iron	doz. \$1.10 to \$1.25
Wood	doz. \$1.75 to \$2.25
Bay's (Stanley R. & L. Co.)	45¢
Razor Edge (Stanley R. & L. Co.)	35¢
Chapin-Stephens Co.	30¢30¢10¢10¢
Goodell's	\$9.00
Wood's F1 and F2	15¢10¢

Shears—

Best	16.00 18.00 20.00 gro.
Good	13.00 15.00 17.00 gro.
Cheap	5.00 6.00 7.00 gro.

Straight Trimmers, &c.

Best quality Jap.

Best quality, Nickel

Fair quality, Jap.

Fair quality, Nickel

Tailors' Shears

Acme Cast Shears

Heinisch's V. S. Shears

Wilkinson's Sheep, 1900 list

Tinners' Snips—

Steel Blades

Steel Lad Blades

Forged Handles, Steel Blades

Heinisch's Snips

Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in.

Niagara Snips

F. S. & W. Forged Handles

Pruning Shears—

Cronk's Hand Shears

Cronk's Wood Handle Shears

Diston's Combined Pruning Hook and Saw

Diston's Pruning Hook

John T. Henry Mfg. Co.

Pruning Shears, all grades

P. S. & W.

Wilkinson's Hedge, 1900 list

Wilkinson's Lawn and Border

Sheaves—Sliding Door—

Stowell's Anti-Friction

Patent Roller, Hatfield's, Sargent's

Reading

R. & E. list

Wrightsville Hatfield Pattern

Sliding Shutter—

Reading list

R. & E. list

Sargent's list

Shells—Shells, Empty—

Brass Shells, Empty:

Climax, Club, Rival, 10 and 12 gauge

Paper Shells, Empty:

Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge

Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge

Climax, Union, League, New Rival, 10 and 12 gauge

Climax, Union, League, New Rival, 14, 16 and 20 gauge

Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge

Robin Hood, Low Brass

Robin Hood, High Brass

Shells, Loaded—

Loaded with Black Powder

Loaded with Smokeless Powder, medium grade

Loaded with Smokeless Powder, high grade

Robin Hood Smokeless Powder:

Robin Hood, Low Brass

Comets, High Brass

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:

Iron

Steel

Burden's, all sizes

Shot—

Drop, up to B, 25-lb. bag

Drop, B and larger

Buck, 25-lb. bag

Chilled, 25-lb. bag

Shovels and Spades—

Association List, Nov. 15, 1902

Snow Shovels—

Long Handle

Wood and Mall, D. Handle

Sieves and Sifters—

Hunter's Imitation

Hunter's Genuine

Buffalo Metallic Blue, R.M.W. Co.

14 & 16

13 & 20

Shaker (Barber's Pat.) Flour Sifters

Sieves, Seamless Metallic

Mesh

Iron Wire

Tinned Wire

Sieves, Wooden Rim—

Nested, 10, 11 and 12 inch

Mesh 18, Nested

Mesh 20, Nested

Mesh 24, Nested

Sinks, Cast Iron—

Painted, Standard list:

12 x 12 to 22 x 36 in.

20 x 40 to 24 x 50 in.

24 x 60 to 24 x 120 in.

Barnes' low list:

Up to and including 20 x 36 in.

20 x 40 to 24 x 50 in.

NOTE—There is not entire uniformity in lists used by jobbers.

Sinks, Wagon—

Cast Iron

Steel

Slates, School—

Keuffel & Esser Co. 40 & 10 @ 50 %
Favorite, Ass Skin 25 & 5 @ 25 & 10 %
Favorite, Duck and Leather 35 & 35 & 5 %
Metallic and Steel, lower list 35 & 35 & 5 %
Pocket 35 & 35 & 5 %
Luffkin's 40 & 10 @ 50 %
Metallic 30 @ 30 & 5 %
Patent Bend, Leather 25 & 5 @ 25 & 10 %
Pocket 40 @ 40 & 5 %
Steel 33 & 5 @ 35 %
Teeth, Harrow—
Steel Harrow Teeth, plain or headed, $\frac{1}{2}$ -inch and larger... per 100 lbs. \$2.75 @ \$3.00
Thermometers—
Tin Case 80 & 10 @ 80 & 10 & 5 %
Ties, Bale—Steel Wire—
Single Loop 80 & 2 $\frac{1}{2}$ %
Monitor, Cross Head, &c. 70 %
Brick Ties—
Niagara Brick Ties 25 & 10 %
Tinners' Shears, &c.—
See Shears, Tinners', &c.
Tinware—
Stamped, Japanned and Pieced, sold very generally at net prices.
Tips, Safety Pole—
Corvett's Saddlery Tools 60 & 10 %
Tire Benders, Upsetters, &c.
See Benders and Upsetters, Tire.
Tools—Coopers'—
L. & J. White 20 @ 20 & 5 %
Hay
Myers' Hay Tools 50 %
Stowell's Hay Carriers 50 %
Stowell's Hay Forks 50 %
Stowell's Fork Pulleys 50 %
Miniature
Smith & Hemenway Co.'s 25 %
Saw
Atkins' Cross Cut Saw Tools 40 %
Simonds' Improved 33 $\frac{1}{2}$ %
Simonds' Crescent 25 %
Ship—
L. & J. White 25 %
Transom Lifters—
See Lifters, Transom.
Traps—Fly—
Balloon, Globe or Acme, doz. \$1.15 @ \$1.25; gro. \$11.50 @ \$12.00
Harper, Champion or Paragon, doz. \$1.25 @ \$1.40; gro. \$13.00 @ \$13.50
Game—
Imitation Oneida 75 @ 75 & 5 %
Newhouse 45 @ 45 & 5 %
Hawley & Norton 65 %
Victor 70 & 10 %
Oneida Community Jump 50 %
Mouse and Rat—
Mouse, Wood, Choker, doz. holes 8 $\frac{1}{2}$ @ 9
Mouse, Round or Square Wire, doz. 85 @ 90 $\frac{1}{2}$
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each \$1.21; doz. \$13.25
No. 2, Rat, doz. \$4.50; case of 50 \$6.75 doz.
No. 3 $\frac{1}{2}$, Rat, doz. \$5.25; case of 72 \$7.50
No. 4, Mouse, doz. \$3.65; case of 150 \$5.47
No. 5, Mouse, doz. \$3.00; case of 150 \$4.50
Wood's E. I. 50 %
Trowels—
Diaton Brick and Pointing 30 %
Diaton Plastering 25 %
Diaton "Standard Brand" and Garden Trowels 35 %
Kohler's Steel Garden Trowels, 5 in. \$4.00
Kohler's Steel Garden Trowels, 6 in. \$4.98
Never-Break Steel Garden Trowels \$6.00
Rose Brick and Plastering 25 & 65 %
Woodrough & McParlin, Plastering 25 %
Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern 50 & 10 %
Western Pattern 60 & 10 %
Handy Trucks \$3.00 @ \$3.60
Grocery \$3.00 @ \$3.60
Daisy Stove Trucks, Improved Pattern \$3.50 @ \$3.80
McKinney Trucks \$3.00 @ \$3.50
Model Stove Trucks \$3.00 @ \$3.50
Tubs, Wash—No. 1 2 3
Galvanized, per doz. \$1.25 1.75 5.25
Galvanized Wash Tubs (R. M. W. Co.):
No. 1, 2 3 4 5 6 7 8 9 10
Per doz., net, \$5.70 6.30 7.20 8.00 7.20 8.10
Twine, Miscellaneous—
Flax Twine: BC. B.
No. 9, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, 22 @ 24 $\frac{1}{2}$
No. 12, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, 18 @ 20 $\frac{1}{2}$
No. 18, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, 16 @ 18 $\frac{1}{2}$
No. 24, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, 16 @ 18 $\frac{1}{2}$
No. 36, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, 15 @ 17 $\frac{1}{2}$
Chalk Line, Cotton $\frac{1}{4}$ -lb. 15 @ 16
Balls 25 @ 30 $\frac{1}{2}$
Cotton Mops, 6, 9, 12 and 15 lb. to doz. 10 @ 18 $\frac{1}{2}$
Cotton Wrapping, 5 Balls to lb. according to quality. 14 $\frac{1}{2}$ @ 20 $\frac{1}{2}$
American 2-Ply Hemp, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls 13 @ 14 $\frac{1}{2}$
American 3-Ply Hemp, 1-lb. Balls 13 @ 14 $\frac{1}{2}$
India 2-Ply Hemp, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls (Spring Twine) 34 $\frac{1}{2}$
India 3-Ply Hemp, 1-lb. Balls 54 $\frac{1}{2}$
India 3-Ply Hemp, $\frac{1}{4}$ -lb. Balls 70 $\frac{1}{2}$
2, 3, 4 and 5-Ply Jute, $\frac{1}{4}$ -lb. Balls 50 @ 10 $\frac{1}{2}$
Mason Line, Linen, $\frac{1}{4}$ -lb. Bls. 46 $\frac{1}{2}$
No. 26 $\frac{1}{2}$ Mattress, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls 37 $\frac{1}{2}$
Wool, 3 to 6 ply, B 6 $\frac{1}{2}$; A 6 $\frac{1}{2}$

Vises—	
Solid Box.....	60%
Parallel—	
Simpson's Adjustable.....	40%
Standard.....	40%
Amateur.....	40%
Columbia.....	25%
Emmert Universal:	
Pattern Makers' No. 1, \$15.00; No. 2, \$12.50.	
Machinist and Tool Makers' No. 1A, \$12.50; No. 5A, \$7.00; No. 6A, \$10.00; No. 10A, \$22.50.	
Quigley.....	25@25.5%
Tool Technicians.....	40%
Fisher & Norris Double Screw.....	15@10%
Hollands:	
Machinists.....	40@40.5%
Keystone.....	65@50.70%
Lewis Tool Co.:	
Adjustable Jaw.....	30%
Monarch.....	50%
Solid Jaw.....	50%
Massey Vise Co.:	
Clincher.....	40%
Perfect.....	20%
Lightning Grip.....	20%
Merrill's.....	20%
Millers Falls.....	60@10%
Parker's:	
Victor.....	20@25%
Regulars.....	20@25%
Vulcan.....	40@45%
Combination Pipe.....	55@65%
Prentiss.....	20@25%
Sargent's.....	40%
Snediker & X. L.....	33%
Stephens.....	33%
Williamson Mfg Co. Double Swivel.....	40.5%
Saw Filers—	
Dinston's D 3 Clamp and Guide, $\frac{1}{2}$ doz. \$30.....	25%
Perfection Saw Clamps, $\frac{1}{2}$ doz.....	\$4.50
Headings.....	6%
Wentworth's Rubb'g Jaw, Nos. 1, 2 and 3.....	55@50%
Wood Workers—	
Mansey Vise Co.:	
Lightning Grip.....	15%
Perfect.....	15%
Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.	
Miscellaneous—	
Bignall & Keeler Combination Pipe.....	60@10%
Vise.....	60@60.5%
Bignall's Combination Pipe.....	60@60.5%
Massey's Quick Action Pipe.....	40%
Parker's Combination Pipe:	
87 Series.....	60%
No. 87.....	60@5%
Williamson Mfg Co. Double Swivel.....	40%
Combination Pipe.....	40.5%
Wads—Price per M.	
B. E., 11 up.....	60¢
B. E., 9 and 10.....	70¢
B. E., 8.....	80¢
B. E., 7.....	80¢
P. E., 11 up.....	\$1.00
P. E., 9 and 10.....	1.55
P. E., 8.....	1.60
P. E., 7.....	1.60
Ely's B. E., 11 and larger.....	\$1.70@1.75
Ely's P. E., 11 to.....	\$3.00@3.25
Ware, Hollow—	
Cast Iron, Hollow—	
Stove Hollow Ware:	
Enameled.....	55%
Ground.....	60%
Plain or Unground.....	65%
Country Hollow Ware, per 100 lbs.....	\$2.75
White Enameled Ware:	
Maslin Kettles.....	70%
Covered Wares	
Tinned and Turned.....	40%
Enameled.....	50%
See also Pots, Glue.	
Enameled—	
Agate Nickel Steel Ware.....	60%
Iron Clad Ware.....	70@10%
Lava, Enameled.....	40@10%
Never Break Enamel.....	50%
Tea Kettles—	
Galvanized Tea Kettles:	
Inch.....	\$ 7 8 9
Each.....	45¢ 50¢ 55¢ 65¢
Steel Hollow Ware—	
Avery Spiders and Griddles.....	65@65.5%
Avery Kettles.....	60%
Porcelain.....	50.5@50.10%
Never Break Spiders and Griddles.....	65.5%
Never Break Kettles.....	65%
Solid Steel Spiders and Griddles.....	65.5%
Solid Steel Kettles.....	60%
Warmers, Foot—	
Pike Mfg. Co., Soapstone.....	40@40.10%
Washboards—	
Solid Zinc:	
Crescent, family size, bent frame.....	\$9 doz.
Red Star, family size, stationary protector.....	\$3.25
Double Zinc Surface:	
Saginaw Globe, family size, stationary protector.....	\$2.90
Cable Cross, family size, stationary protector.....	\$3.15
Single Zinc Surface:	
Naiad, family size, open back, perforated.....	\$2.65
Saginaw Globe, protector, family size, ventilated back.....	\$2.50
Brass Surface:	
Brass King, Single Surface, open back.....	\$3.25
Nickel Plate Surface:	
No. 1001 Nickel Plate, Single Surface.....	\$3.25
Glass Surface:	
Glass King, Single Surface, open back.....	\$3.15
Enamel Surface:	
Enamel King, Single Surface, ventilated back.....	\$3.25
Washers—Leather, Axle—	
Solid.....	80¢10@80¢10¢10.5%
Patent.....	90¢90¢45%
Coll: $\frac{1}{4}$ 1 1 $\frac{1}{4}$ 1 $\frac{1}{4}$ Inch.....	
.....	10¢ 11¢ 12¢ 13¢ per box

Iron or Steel—
 Size bolt... 5-16 7/8 1 1/2 3/4 3 1/2 3 1/2
 Washers... \$5.70 4.80 3.50 3.50 3.10
 The above prices are based on
 5.70¢ off list.
 In lots less than one keg add
 1/2¢ per lb.; 5-lb. boxes add 1/2¢
 to list.

Cast Washers—
 Over 1/2 inch, barrel lots...
 per lb. 1 3/4 @ 2 1/2

Weather Strip—
Flexible Felt—
 Lined, per 100 ft., \$2; \$3; \$4... 40¢ 10¢
 Moore's Unlined, per 100 ft., \$2; \$3;
 \$4... 50¢ 10¢

Wedges—
 Oil Finish... lb. 2.70 @ 2.80¢

Weights—Hitching—
 Covert Mfg. Co... 40%
 Covert's Saddlery Works... 60¢ 10¢

Sash—
 Per ton, f.o.b. factory:
 Eastern District... \$27.50 @ \$28.00
 Southern Territory... \$20.00 @ \$23.00
 Western and Central
 Districts... \$23.00 @ \$25.00

Wheels, Well—
 8-in., \$1.55; 10-in., \$2.00; 12-in.,
 \$2.50; 14-in., \$1.00.

Wire and Wire Goods—
Bright and Annealed:
 6 to 9... 80%
 10 to 18... 80¢ 2 1/2
 19 to 26... 80¢ 7 1/2
 27 to 36... 80¢ 2 1/2
Galvanized:
 6 to 9... 75¢ 5
 10 to 14... 75¢ 7 1/2
 15 to 16... 72¢ 10¢ 2 1/2
 19 to 26... 75¢
 27 to 36... 72 1/2
Coppered:
 6 to 9... 75¢ 5
 10 to 14... 75¢ 7 1/2
 15 to 18... 72¢ 10¢ 2 1/2
 19 to 26... 75¢ 10¢ 5
 27 to 36... 75%
Tinned:
 6 to 14... 75¢ 10¢ 2 1/2
 15 to 18... 75¢ 7 1/2
Annealed, Steel and Tinned, on
Spools... 70¢ 10¢ 10¢ 70¢ 10¢ 10¢ 10¢
 Brass and Copper on Spools...
 60¢ 5 @ 60¢ 10¢ 5

Brass, Hat Feb. 26, '96... 15%
Copper, Hat Feb. 26, '96... 25%
Cast Steel Wire... 50%
 Wire Clothes Line, see Lines.
 Wire Picture Cord, see Cord.

Bright Wire Goods—
 List June 24, '03... 90¢ 25%
 Brass Cup Hooks and Brads
 Screw, Hooks... 85¢ 10

Wire Cloth and Netting—
Galvanized Wire Netting... 80¢ 5 @ 80¢ 10%
Painted Screen Cloth, 100 ft., \$1.10
Standard Galv. Hardware Grade:
 Nos. 2, 2 1/2 & 3 Mesh, sq. ft. 3
 Nos. 4 and 5 Mesh, sq. ft. 3 1/2
 No. 6 Mesh, sq. ft. 3 1/2
 No. 8 Mesh, sq. ft. 3 1/2
 Wire, Barb—See Trade Report

Wrenches—
 Agricultural... 75¢ 10 @ 75¢ 10¢ 10%
 Alligator or Crocodile... 70¢ 10¢ 75%
 Baxter Pattern 8 Wrenches...
 70¢ 5 @ 70¢ 10%
Drop Forged 8... 45¢ 15¢ 5%
 Acme... 60¢ 10%
 Alligator Pattern... 70%
 Bull Dog... 70%
 Bemis...
 Adjustable 8... 40%
 Adjustable 8 Pipe... 40%
 Bemis Pipe... 60%
 Briggs Pattern... 40%
 Combination Black... 40¢ 5
 Combination Bright... 50%
 Merrick Pattern... 50%
Boardman's... 60%
 Coes' Genuine Knife Hdl... 40¢ 10¢ 5¢ 5%
 Coes' Genuine Steel Hdl... 40¢ 10¢ 5¢ 5%
 Coes' Genuine Key Model... 40¢ 10¢ 5¢ 5%
 Coes' Genuine Hammer Handle... 40¢ 10¢ 5¢ 5%

Coes' "Mechanics"... 40¢ 10¢ 10¢ 5¢ 5%
 Donohue's Engineer... 40¢ 10%
 Eagle... 50¢ 10%
 Elgin Wrenches, \$ doz... 36.25
 Elgin Retreading Attachment, one
 die... 36.25
 Elgin Extra Dies, \$ doz... 37.00
 Elgin Extra Jaws, \$ doz... 37.75
 Elgin Monkey Wrench Pipe Jaws,
 \$ doz... 32.10
 Gem Pocket... 30%
 Hercules... 70%
 W & B. Machinist... 50¢ 5%
 Case lot of Dies, \$ doz... 50%
 Less than case lots... 50%
 Solid Handles, P., S. & W... 50¢ 10¢ 20%
 Stillson... 65%
 Vulcan Chain... 50%

Fruit Jar—
 Triumph Fruit Jar Wrench, 5 gross
 lots, \$ gross, \$7.50; \$ doz... \$9.80

Wringers—
 Tuttle Roller, Press Mop Pail Wringer,
 each, \$8.00; \$ doz... \$18.00

Wrought Goods—
 Staples, Hooks, &c., list March
 '7, '92... 90¢ 90¢ 10%

Yokes, Neck—
 Covert Saddlery Works, Trimmed... 70%
 Covert Saddlery Works, Neck Yoke
 Centers... 70%
Yokes, Ox, and Ox Bows—
 Fort Madison's Farmers' & Freight-
 ers'... list net

Zinc—
 Sheet... per 100 lbs., \$3.25 @ 3.80

